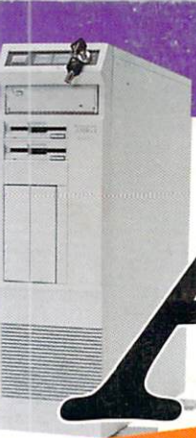
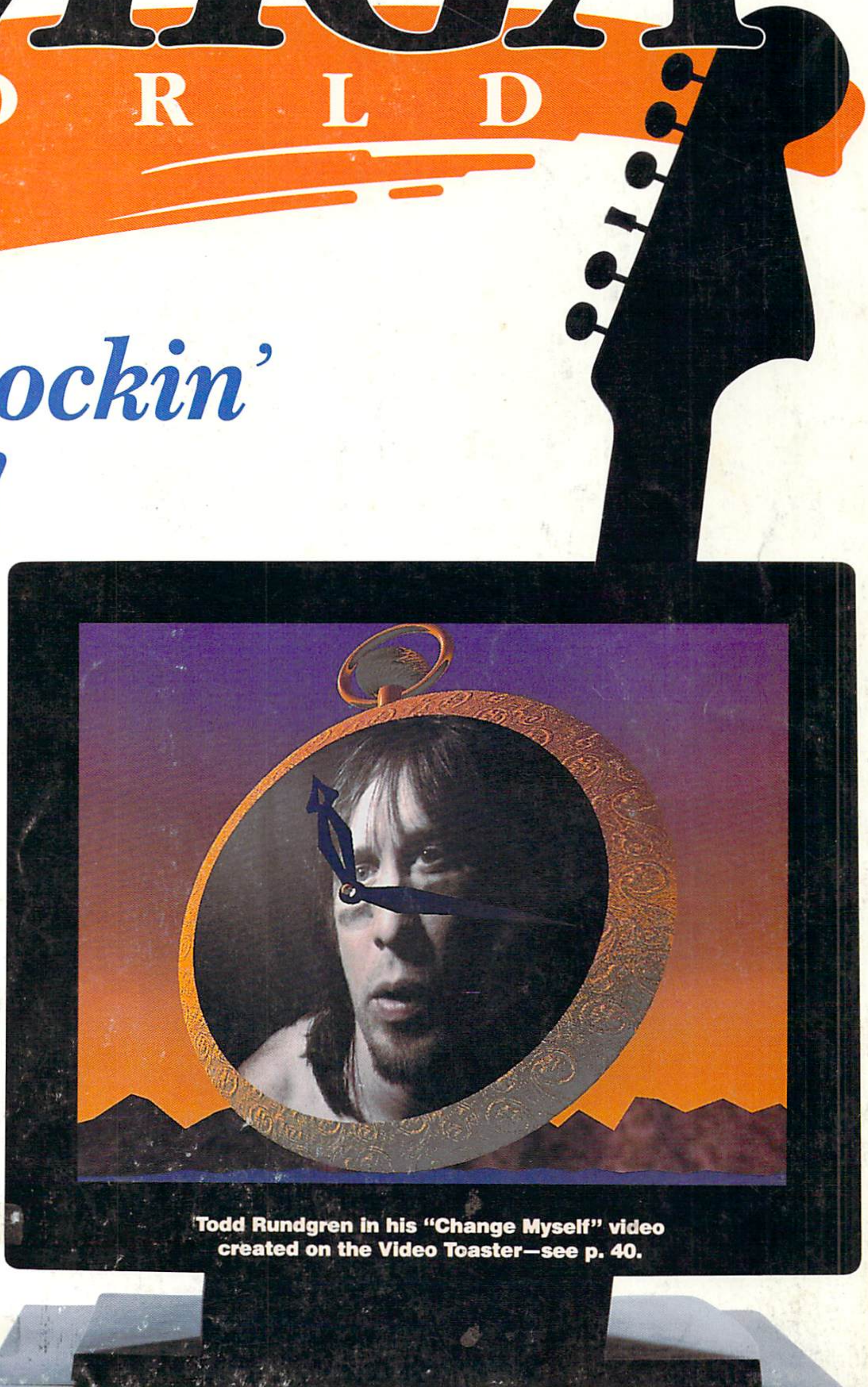
SPECIAL! THE A3000T "A TOWER OF POWER" — p. 42



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AMIGA WORLD



Todd Rundgren in his "Change Myself" video created on the Video Toaster—see p. 40.

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Reviews & Games

May 1991
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Just The Facts:

What Makes Digi-Paint 3 the <u>Ultimate</u> Paint Program?



"Finding the best paint program for your Amiga can be confusing, but once you have the facts it's simple."

Laura Longfellow
Sales Manager
NewTek Inc.

"Why is Digi-Paint 3 better than DeluxePaint III™?"

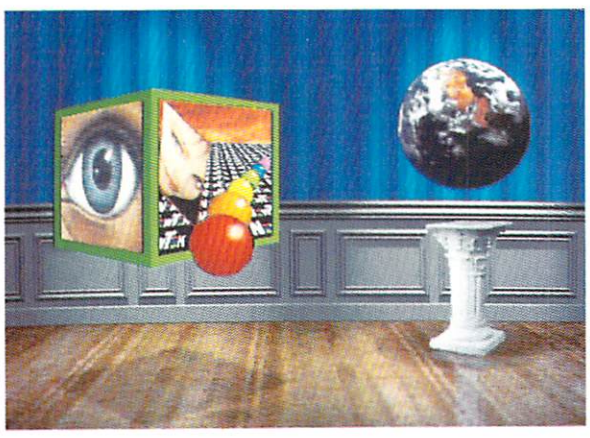


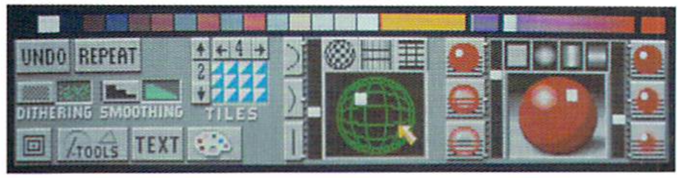
Digi-Paint 3 works in the Amiga's powerful Hold And Modify (HAM) mode, which allows you to paint using all 4096 colors simultaneously. By comparison, Deluxe Paint III (by Electronic Arts) operates in less sophisticated modes, restricting you to a maximum of only 64 colors. Advanced features available in Digi-Paint 3 – including Colorizing, Variable Transparency, Shading, Lighten, Darken and Range Painting – are simply not possible in Deluxe Paint III due to its 64 color limitation. AMIGAWORLD warns, "Competitors may want to head back to the drawing board, because Digi-Paint 3 is hard to beat!"

"What makes Digi-Paint 3 better than other HAM paint programs?"

Digi-Paint 3 is the only Amiga paint program written in 100% assembly language. Although challenging to program (taking up to 10 times longer than other computer languages), it's the only way to achieve the incredible speed found in Digi-Paint 3. AMIGAWORLD calls it "the fastest HAM paint program yet" and AMIGA SENTRY estimates it's, "6-10 times faster" than the nearest contender.

Other advanced features found *only* in Digi-Paint 3 include: anti-aliased texture mapping, anti-aliased fonts, ARexx support, 1024 x 1024 super bitmaps with auto-scrolling and dithering to 30 bits per pixel (over a billion colors internally, giving you tens of thousands of apparent colors). COMPUTER SHOPPER magazine reports "Digi-Paint 3 is without a doubt the most advanced HAM paint program to date!"





"But is Digi-Paint 3 easy to use?"

I've learned that no matter how powerful a program is, if it's not friendly it's not worth my time. We designed Digi-Paint 3 with all users in mind – from the beginner just starting out with computers, to the "power user" who demands the most advanced features possible. The spiral-bound manual contains a step-by-step Guided Tour, 11 hands-on tutorials, a color coded reference card, and almost one hundred example photos.

Digi-Paint 3's intuitive user interface was created by Digi-View designer (and NewTek Founder) Tim Jenison and renowned Amiga artist Jim Sachs. It features innovative "Dashboard" controls which AMIGAWORLD regards as "a joy to use" and "very easy to learn and understand". INFO MAGAZINE says the new interface "looks great and works logically".





"What is the Transfer 24 program included with Digi-Paint 3?"

Transfer 24 is a separate program disk included in the Digi-Paint 3 package, allowing you to alter any picture's brightness, color saturation, contrast, hue and sharpness, almost as easily as adjusting the controls on your television set. Transfer 24 also lets you modify the size, palette, and resolution of any picture. These powerful features, known as "Image Processing", give you incredible control over your final artwork. You can also save your image in any of the Amiga's 24 resolution modes (up to 768x480) making it compatible with all Amiga graphics software. AX MAGAZINE notes that "Transfer 24 gives you even more options as to the final appearance of your work". AMIGAWORLD declares, "Transfer 24 is great for making overall changes."

"What technical support does NewTek offer?"

Digi-Paint 3 has one other thing you won't find in any ordinary paint program: a toll-free help line. If you should have any questions while using Digi-Paint 3, you're not on your own. Call NewTek's technical support team at 1-800-736-7617 Monday through Friday, 8 am -7 pm Central Time.

Digi-Paint 3 is available now at your local Amiga dealer or call **1-800-843-8934** or **1-913-354-1146.**

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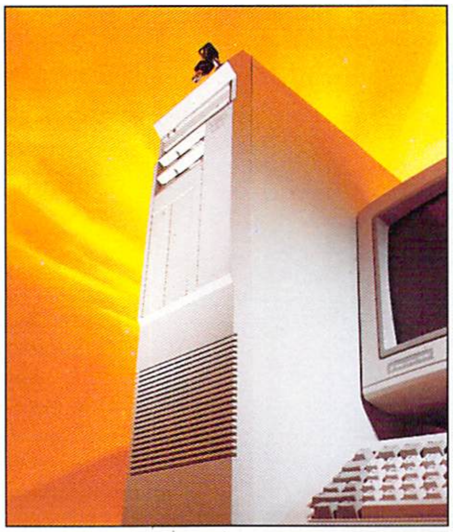
NEWTEK
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FEATURES

ARTICLES

COLUMNS



*Just Announced! The new **A3000T** is a "Tower of Power" built to handle mega-expansion possibilities. Story and photos begin on page 42.*

DEPARTMENTS

REVIEWS

GAMES

***AW* PRODUCT INFORMATION**
Information for contacting developers of products covered in each issue will now be presented in one central "Manufacturers' Addresses" list. See page 108.

COVER PHOTOGRAPH BY ED JUDICE

AmigaWorld (ISSN 0883-2390) is an independent journal not connected with Commodore Business Machines, Inc. *AmigaWorld* is published monthly by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. U.S. subscription rate is $29.97, one year; $46.00, two years; $64.00, three years. Canada $38.97 (U.S. funds), one year only. Mexico $38.97, Foreign Surface $49.97, Foreign Airmail $84.97 (prepayment is required on Foreign Surface and Airmail subscriptions in U.S. funds drawn on U.S. bank). All rates are one-year only. Second-class postage paid at Peterborough, NH, and at additional mailing offices. Phone: 603-924-0100. **Postmaster**: Send address changes to *AmigaWorld*, Subscription Services, PO Box 58804, Boulder, CO 80322-8804. Nationally distributed by Kable News Co., *AmigaWorld* makes every effort to assure the accuracy of articles, listings and circuits published in the magazine. *AmigaWorld* assumes no responsibility for damages due to errors or omissions.

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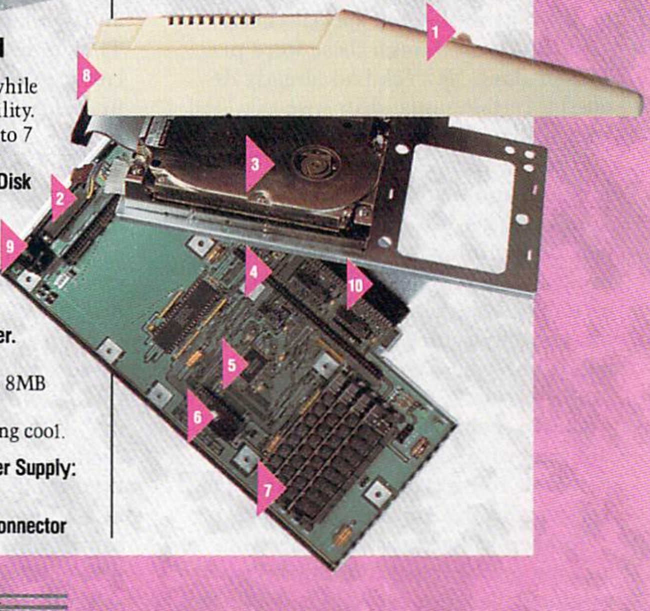
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CHIEF CONCERNS

The gifted bad boys of video put on good shows in many ways.

THE FIRST AMI-EXPO keynote speech I ever heard was in Chicago in the summer of 1989. The room was packed, and there was a certain rock concert-like tension. Soon the lights dimmed, and from out in the hall you could hear the whine of a small gasoline engine getting closer.

Suddenly the doors swung open, and a man in a business suit with a motorized fan on his back entered the room on roller skates and zoomed to the podium. After the laughter, applause and engine noise died down, NewTek founder Tim Jenison launched into an hour-long speech with video and animation accompaniment. This set a standard for Amiga speeches that I have never seen matched.

At that time, NewTek, with a few cool Amiga products, was simply a fun company that would show up at Ami-Expos to demo its unshipped special-effects card. But even though these were pre-Toaster days, NewTek had already defined a certain outlandish style that had a particular appeal.

Late last year, though, the Toaster shipped, and neither NewTek nor the Amiga market will ever be the same. It may be that most Amiga owners will never buy a Toaster. But everyone will be touched by this device. The Amiga has not only gained its long-sought credibility, but it has regained the excitement of early years.

Unlike multimedia, a concept that is still somewhat vague, video is understandable to everyone. That makes the Toaster and the Amiga an easy sell.

To keep it that easy, there needs to be an even greater wealth of third-party products that support Amiga video. This is clearly happening. Everyone from Impulse to GVP to Digital Creations to Gold Disk to Progressive is creating hot new video products. Just as the Mac role in desktop publishing is protected by fonts, monitors, and a broad array of titles, Amiga's role in video will be guaranteed by these products.

There also needs to be an array of Toaster-specific products. NewTek has talked about opening the Toaster up to third parties, and has even contemplated a Toaster developers' conference. But whether by design or overwork on the part of NewTek, some developers who would like to develop Toaster products aren't getting the information they need—and they're grumbling. To protect the long-term future of the Toaster against incursion, NewTek must aggressively feed third parties with critical information.

NewTek is now also facing the challenges that have broken many a company. They must manage their growth and accelerate technical development. They must also maintain the corporate culture that made them successful in the first place.

WHAT CULTURE?

I've only been to NewTek once. It was during the making of the Penn & Teller Toaster video, which was shot on an empty floor of an old office building in downtown Topeka.

Before spending the day pestering those actually doing the work, I toured the old NewTek main office, located in one of the shabbier sections of Topeka. It seemed pretty normal. I found a receptionist, offices, and phones. There was also a huge open area with a surround-sound video system and piles of laser discs, and a room off that with a great selection of old arcade video games. As I poked through the various offices, I noticed quite a few pairs of roller skates, and heard of the NewTek beefs with local law enforcement over the right to skate in the street. (I tried it in Peterborough, but the chief of police here also disapproved.)

Eventually, I was taken to the Main Street office where the developers worked and, in some cases, lived. But instead of a nice NewTek sign, there was a huge black-and-white sign proclaiming that this was "Nuclear Waste Disposal Systems," a company where "Your family's safety is all but assured." Behind the huge glass front hung a protective yellow suit with a strategically placed tear, flashing lights, a few old pieces of electronic gear, and a bunch of nuclear warning signs. A small bulletin by the door, however, reassured passersby that "6 days have passed since the last major accident."

I stood there and watched the Topekans pass by, some registering curiosity, some disinterest, and others disdain.

That's gone now. NewTek has moved into plush new office space on the rich side of town. This is just one example of the change the Toaster has wrought.

Because of all the publicity, everyone is going to be gunning for the Toaster, from Apple to third parties to traditional video companies who are downsizing and cost-reducing their professional equipment.

Not only must NewTek's technical development proceed at a furious pace, but the bad boys of video must continue to push marketing to the outer limits. I hope they continue the forays into enemy territory, as they did by exhibiting at MacWorld, again and again.

I expect NewTek to keep the pedal to the metal, but when you drive at those speeds, you've got to be real careful. ■



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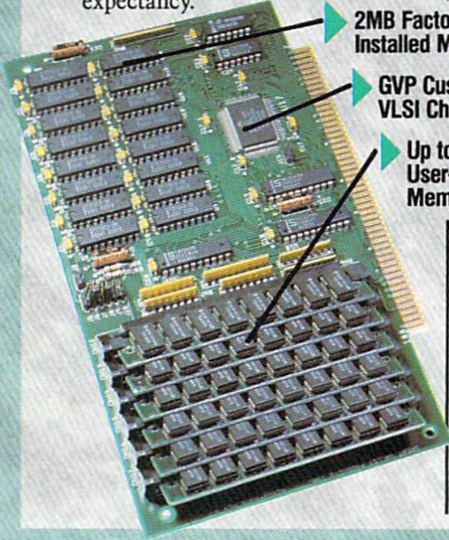
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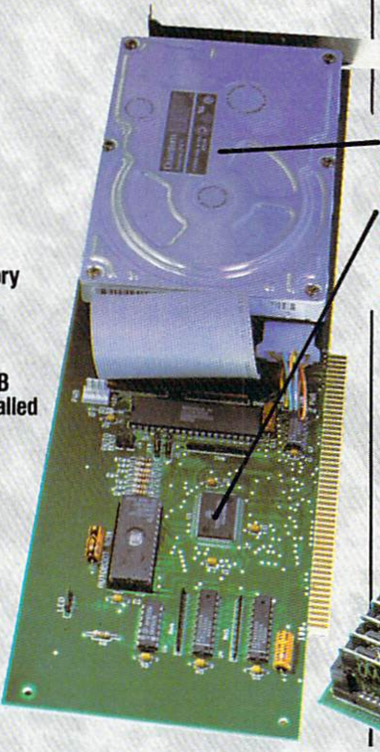


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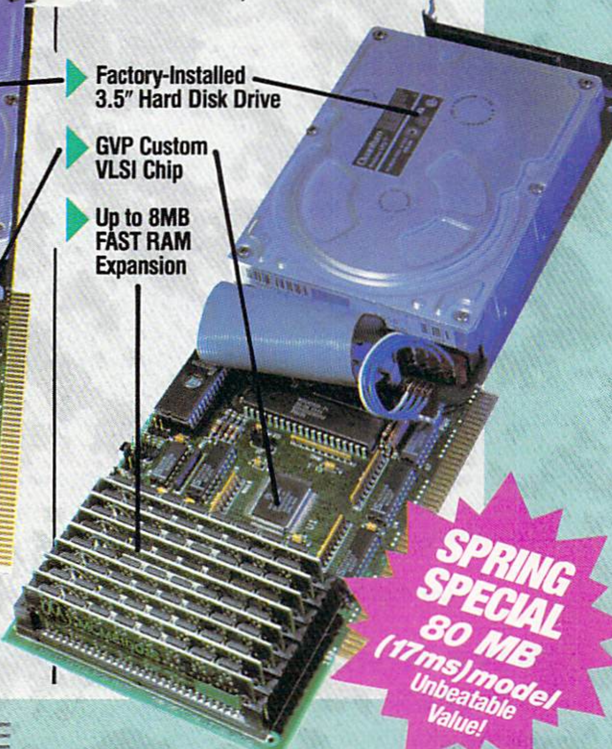


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REPARTEE

Comments, complaints, and concerns

from AmigaWorld *readers.*

TRIM THE FAT!

Recently, *AmigaWorld* said that it would like to raise the quality of the magazine—along with the number of subscribers, I assume. As an experiment, why don't you place one selected article from the *Tech Journal* into *AmigaWorld*? This type of information is exactly what's missing from your magazine.

If you have to cut something, I suggest you trim down the size of your product-review section—it's enough to put someone to sleep. Some of these reviews could be greatly abbreviated. (I hope you are not concerned with preserving staff jobs in this area . . .).

Ricky Gerontis
Kent, Washington

TO ERR IS HUMAN . . .

Regarding Doug Barney's March issue Chief Concerns—only my Amiga is perfect. It never makes errors. I do. *AmigaWorld* does. Since *AW* contains so much each month, I don't know how it makes so few errors. I am glad to know you'll have a stronger police force.

Tom O'Brien
Los Angeles, California

WON'T WORK WITH WORKBENCH WOES

Some Amiga software developers are placing the future of all Amiga computers in a perilous position. I specifically refer to the inability of some software to "behave" properly in the Workbench environment. I was initially attracted to the Amiga because of the ability of Workbench to provide a uniform method for initiating various applications. Indeed, one of the Amiga's major attractions is the Workbench environment.

I recently purchased two highly rated software games. I was sorely disappointed when I found that neither would work from Workbench. Although one ran from my hard disk, I needed to perform a keyboard sequence first. At least, I was able to back up this game.

I could not load the second program to my hard disk, nor could I back up the original disks for my own protection. I had purchased a piece of commercial software that would not execute within the Workbench environment, could not be loaded to a hard disk, and could not be copied in case my original disk became corrupted.

This approach to software development is gravely archaic. Consumers of commercial software should be able to archive personal copies for back-up purposes. In addition, consumers should be able to load any software to hard disk for the sake of convenience. Finally, and of paramount importance, is that all Amiga software should adhere to the Workbench environment.

If any of those above-mentioned conditions cannot be met, then the developer should clearly so state. Omission of those facts from easy discovery by the consumer borders on dishonesty.

Eugene Kosaka
Walnut, California

IN THE NAME OF SCIENCE

Upon reading some very interesting comments in various computer magazines about Amiga's capabilities—including a story about the Virginia Polytechnic Institute (VPI) Computer Science Department choosing the "new" Amiga and UNIX—I bought an issue of *AmigaWorld*.

I can readily understand why the Amiga is not considered a "serious" computer. If I had flipped through your December issue without knowing about the VPI decision and the UNIX port, that's exactly the impression I would have received. Computers generally perceived as "non-serious" are unlikely to attract development (or ports) of serious applications.

A major topic in many computer circles is "open systems." I saw no reference to that topic in the single issue I have seen. Apparently, Amiga has its own proprietary system, and except for the new UNIX port, it does not readily communicate with anyone else. At one stage, that may have been acceptable; it is not so now.

It seems to me that the prime order of business for CBM and Amiga software suppliers should be to convert quickly to an open operating system. I would opt for UNIX; there may be other reasonable choices, but I doubt it.

Robert D. Freeman
Stillwater, Oklahoma

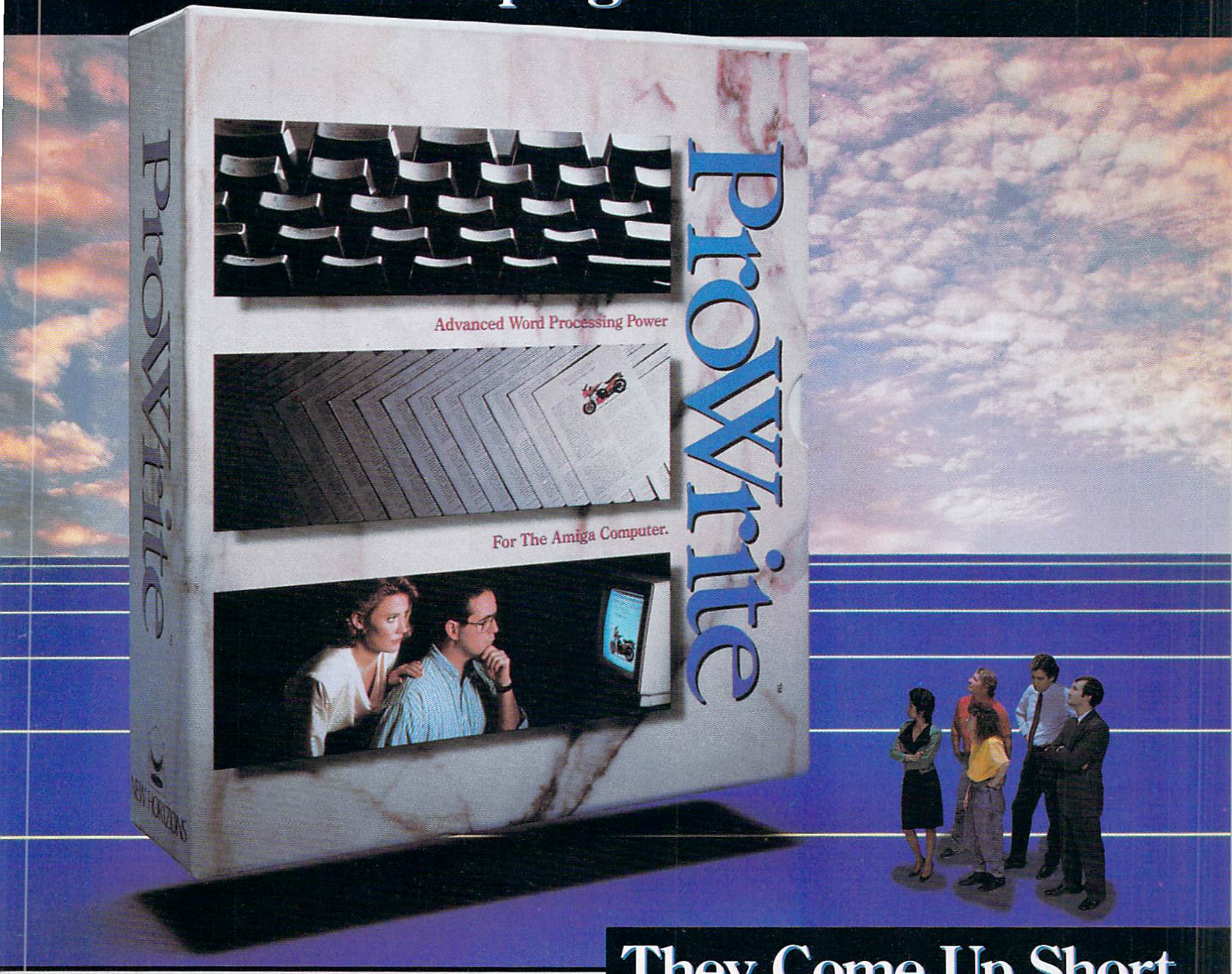
WE SHALL OVERCOME

It has been my observation that some software companies treat Amiga users as second-class consumers. I purchase and enjoy a lot of game software, mostly military and flight simulations. It is extremely frustrating to discover that IBM users can install certain games in their hard drives but Amiga users cannot.

Are we willing to settle for less for our money? I don't think so. I hope my fellow Amiga users will do as I do—promptly return the item if it lacks this important feature. Write to these offenders! Demand equality! Our Amiga dollar should buy just as much as anyone else's. Support and praise the companies that do offer us what we want and need, and don't buy products from those who are all too eager to take our money but won't change their double standard.

George Ribeiro
Vallejo, California ■

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Headliners

NEWS FROM THE AMIGA COMMUNITY

"(Commodore) is likely to be one of the big success stories of the early 1990s. [Its stock is] a strong buy."
—Mark Stahlman, Analyst, Alex. Brown & Sons.

Commodore Exhibits at InfoCOMM; Forges Another Link to Multimedia Community

ORLANDO, FLORIDA—Multimedia is more than just a buzzword. At least that's what the scores of video, audio, computer, and multimedia companies exhibiting at InfoCOMM tried to impress upon attendees. Commodore made its first-ever InfoCOMM appearance at the February event, which annually attracts a variety of multimedia producers, buyers, and end-users. This year's show drew the biggest crowd yet, and CBM greeted the multitudes by demonstrating the full line of Amiga computers as well as selected CDTV applications. Judging from the display, Commodore seems to be the most complete multimedia-oriented computer line on the market.

Not to be outdone, Apple and IBM also showed off some interesting products. IBM displayed its full-motion video cards and DVI systems, while SuperMac demonstrated a $25,000 Macintosh system capable of playing 24-bit digital video from an optical drive. More importantly, Phillips had a full complement of CD-I delivery systems, showing an impressive range of applications. Of course, each of these systems cost more than twice as much as Commodore's CDTV.

The video contingent, which is heavily represented at InfoCOMM, included Sony. Sony's large booth was filled with a wide variety of video cameras and videotape recorders (VTRs), and one of the most popular systems demonstrated was the new 9700 Hi-8 editing deck. Perfect for industrial desktop-video applications, the Sony 9700 is becoming a hot item in the video industry in general, and among Amiga/Video Toaster users in particular.

Panasonic displayed its new 7750 SVHS VTR, a professional-level unit with built-in time code, a time-base corrector, and single-frame recording capabilities. Panasonic seemed extremely enthusiastic about the use of this $6000 deck with NewTek's Video Toaster, and from what I could see, the two appeared to make a good match.

NEC made a big deal of its new PC-VCR, an SVHS VTR that is controllable via computer and contains some sort of time code to make it nearly frame-accurate. Rumor has it that a PC-VCR driver is under development for AmigaVision, so this unit may well become a popular accessory for Commodore's multimedia authoring system.

RGB Systems spotlighted a new version of its AmiLink video editing system. The latest and greatest supports the Video Toaster, allowing you to trigger digital-video effects from within the AmiLink environment. Finally, the ubiquitous NewTek demonstrated the ever-popular Video Toaster in its usual oversized booth. If I had to pick one product as the hit of the show, the crowds at the NewTek display would lead me to choose, you guessed it, the Toaster.

—LRW

Amigas Take Jetsons for a Ride

ORLANDO, FLORIDA—At Universal Studio's Funtastic World of Hanna-Barbera, visitors to the Jetsons' Computer Paint Station can "finger paint" images of Yogi Bear, Fred Flintstone, and six other popular Hanna-Barbera cartoon characters. Working in this whimsical, free-form structure amidst robots, flying cars, and flashing lights, many electronic artists may not realize that a group of popular Commodore characters—five one-megabyte A500s—work behind the scenes of the exhibit to provide interactivity.

Each Amiga in the Paint Station is hooked up to a vertically positioned, 19-inch touch-screen monitor. Here, visitors can choose a character to color simply by pointing to it on the screen. In a flat counter before each monitor, a glass plate covers a rear-lit transparency representing daubs on an artist's palette. While some of these "daubs" are plain colors, others are fanciful plaids or polka dots. As with the character outlines, participants can make area-fill choices just by touching. Transforming line drawings into colored cels—the building blocks of animation—gives visitors insight into animation techniques.

Art & Technology of Burbank, California, was responsible for the design, engineering, fabrication, and installation of the interactive exhibit. The company contracted Saddleback Graphics, makers of the kids' graphics program, My Paint, to do the programming. Hal Lafferty, a Saddleback development-team member, says that the programmers gave the application some smarts. "Some of the characters have two hands," he points out. "If you color one hand, the other automatically fills with the same color." Lafferty and his colleagues said that they enjoyed working with the Amiga because of the machine's video display and powerful graphics tools.

Because the exhibit was engineered to have a 20-year life and to run 12–16 hours a day, 365 days a year, Art & Technology required a rugged and reliable workstation. "Using stock Amigas allows spare parts to be replaced quickly and easily . . . minimizing downtime," explained Tim Doggett, an electronics designer with Art & Technology. He added that a sixth A500 is kept on hand as a spare, in case one of the first-string players goes down.

Intrepidness was not the A500's only selling point, however. "It is powerful enough to handle the software requirements, it can connect directly to standard video monitors, and it is readily and inexpensively available," said Doggett. By all accounts, the Amigas—and the exhibit as a whole—are a resounding Yabba Dabba Doo success!

—Carol S. Holzberg

Enemy #1: Illiteracy

FALLS CHURCH, VIRGINIA—IMSATT, developer of Commodore's AmigaVision multimedia authoring system, has created an interactive program to teach basic literacy skills to adult learners. In developing the SkillWorks software, the programmers tried to reproduce the qualities of the ideal teacher. As a result, the program allows self-pacing, flexibility, and ongoing feedback, including positive reinforcement.

A full system, comprising the courseware package, an Amiga 3000, AmigaVision, and a videodisc player, costs $13,000. This setup, with its full-motion video, sound, and graphics, is designed to engage adult learners and aid in their retention of course material. IMSATT is marketing the system to corporations, the military, prisons, labor unions, and communities that operate literacy programs.

—BG

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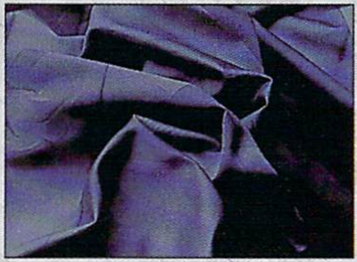
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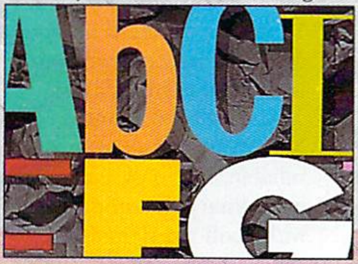
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. . . . .



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Magneto/Optical Drives:

XY600RW

Ricoh MO9200E

Magnum/650

The big O.

By Lou Wallace

OF ALL DATA-STORAGE options available, the one packing the most powerful punch is the erasable/writable optical (also called magneto-optical) disk. Based on laser technology, these data warehouses can store anywhere from 550 to 600MB of data. The optical disk is coated with a special magnetic material that can be altered only when heated by a laser. This technology significantly increases the disk's integrity, so that you can safely store data for years without sustaining damage from magnetic fields.

To learn what an Amiga owner might expect from these compact goliaths, I looked closely at three SCSI-based erasable optical drives. I checked them not only for performance, but also, and more importantly, for reliability. To that end, I used each one as a secondary drive (the primary drive was a conventional Quantum hard disk) on a day-to-day basis. While I used the drives as secondary storage, they can easily act as the system-boot drive, exactly like a hard disk.

The XY600RW

The XYXIS Corporation's erasable XY600RW drive ($3995), based on the optical-drive engine manufactured by Ricoh, holds up to 560MB of storage on its double-sided cartridges (280 megs per side). Its average access time is 61 milliseconds.

As with any drive, optical or otherwise, you need a controller. Following XYXIS' recommendation, we used the Commodore A2091. The XY600RW's installation is relatively simple if you are already using the A2091: Simply connect the drive unit to the A2091 with the SCSI cable provided and use the program Commodore supplies to install the card. With the A2091 HDToolbox software, all you need do is enter the necessary parameters supplied in the XYXIS manual. The software writes all the necessary operating information to the drive (using CBM's rigid-hardblock approach instead of the time-consuming mountlist method). Then format the drive—which takes quite a while—and reset your computer.

> **YOUR TURN!**
>
> With the XYXIS erasable optical drive, I did not notice any difference in speed from typical hard drives. The cost per megabyte worked out for me and got better after I bought my second cartridge.
>
> *Jay Craswell*
> *Jordan, Minnesota*

One thing that you should consider is the SCSI-terminator resistor packs. These packs indicate the first and last drive in the SCSI chain. Depending upon your internal hard drive, you might have to change its termination. As it turned out, no change in termination was necessary with my system, which includes a Quantum 105MB SCSI-drive. If you own another type of internal hard disk, however, you might need to add or remove some of the terminator resistor packs. (Note: this holds true for all three drives.)

Once you have your system set up, a standard drive icon appears on your Workbench screen. The XY600RW works well with the Shell/CLI, Workbench, and various disk utilities such as DiskMaster (Progressive Peripherals). Except for operating a bit more slowly, the drive performed no differently than any other hard disk—but it's a lot bigger.

The drive came in handy for storing some very large digitized animations, which were, in some cases, larger than 25MB in length. While some of the larger animations were obviously too big to play directly from memory, I was able to play them back—albeit slowly—using the disk anim player functions of DigiMate (Mindware).

What kind of speed performance can you expect from an optical drive? Using one of the standard PD hard-disk performance programs, DiskPerf 3, read values were 210K per second and write values were 60K (performance may vary with real-world applications). As you can see in the comparison chart (see Figure 1), the read time is acceptable for daily use, although the write time does lag behind typical hard disks.

After several months of use, the XYXIS optical drive proved to be quite reliable. Not only did it stand up well in ordinary day-to-day use, but it also withstood the demanding reads and writes that were required for creating

For information on vendors of products mentioned, see the "Manufacturers' Addresses" list on p. 108.

and manipulating large animations.

THE RICOH MO9200E

Great Valley Products (GVP) also offers a Ricoh drive that uses double-sided cartridges—in this case with 300MB per side (286MB when formatted). The Ricoh MO9200E ($1199) has an access time of 66.7 milliseconds, which is quite acceptable for this type of drive.

I installed this drive on my A2500, equipped with a GVP Series II controller that was already handling a 40MB Quantum hard disk and a 40MB Syquest removable drive. Using GVP's Faaast-Prep software, setting up and configuring the drive was straightforward. Again, I had no problem with the SCSI-terminator resistor packs.

As a test of the GVP optical drive, I used the Video Toaster (NewTek) to create a 125-frame animation. Then, I saved each frame to the drive. After several days of computation and rendering, I ended up with 125 IFF24 images that took up over 100MB of disk space. Then, using ARexx and ADPro, I converted these 125 frames into a second set of 125, this time in the Amiga's overscan HAM display mode. These images took another 12MB of disk space. Finally, using a PD program called BuildAnim, I created a 6MB Anim file from those 125 HAM images. The total disk space used in the project was nearly 120MB. The drive performed flawlessly during the test.



YOUR TURN!

We use our Magnum/650 in conjunction with video research and development. It is pretty much transparent to the user and, more importantly for us, it's great for security because the cartridges are removable.

E.M.
Phoenix, Arizona



From left to right: the XY600RW, the Magnum/650, and the Ricoh MO9200E.

THE MAGNUM/650

Active Circuits' optical contribution is based on a Sony drive. The Magnum/650 ($4995) is a 650MB, cartridge-based system, which, when formatted, gives you a total of 297MB per side. The drive's access time is approximately 105 milliseconds.

The Active Circuits erasable optical drive connects to the external SCSI port of your hard-disk controller or your A3000 SCSI port. The installation process is straightforward: Simply connect the SCSI cable and use the HDToolbox software (in the case of the A2091 or A3000) to set up the drive parameters and rigid bootblocks. The only problem I encountered with installation was due to some variation in the Western Digital chips in the A3000 hard-disk controller, which caused the Magnum/650 to lock up occasionally when the drive was accessed. Active Circuits' technical support suggested changing the drive parameters to indicate that the drive did not support reselection. I made the change and the problem went away.

Again, using DiskPerf 3 performance software, I tested the Sony drive for disk I/O speed. It reported results of 180K per second for reads and 140K for writes. Again, keep in mind that these results are merely output from very simple tests; depending on what you are doing in a real-world situation, you might well get faster or slower performance.

Drive	Read K/sec	Write K/sec
Floppy	16	11
Quantum HD	572	419
XYXIS	210	60
Magnum	180	140
MO9200E	291	110

Note: All tests were done on a 68030 machine operating at 25 MHz.

I employed the Magnum/650 on a day-to-day basis as a secondary disk ►

PHOTOGRAPH BY ED JUDICE

drive for the A3000. Used from both the Shell and Workbench under the new 2.0 operating system, it performed very well over a period of several months.

During my brief time as a user of erasable optical drives, two facts stand out. First, installation seems to be fairly simple, or at least no more difficult than any other external hard disk or mass storage device. Second, optical-drive technology is almost transparent to the user, because it acts and feels like any other type of drive. Overall, it is simply a very large—and somewhat slow—storage device.

So can I recommend an erasable optical drive to you? The answer is a definite yes, as long as your needs far exceed conventional hard disks. And the best part is that although you can expect to pay a lot up front for the optical drive, as you add more cartridges, the cost per megabyte just keeps decreasing.

ProVector

No brag, just fast.

By Mitch Wells

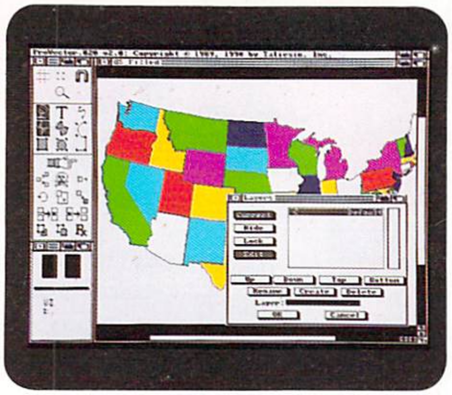
AT LONG LAST, the Amiga is gaining recognition as a desktop publishing solution, thanks to programs such as Pro Page and Pro Draw (Gold Disk), PageStream (Soft-Logik), The Art Department (ASDG), and Saxon Publisher (Saxon Industries). These programs help to showcase the Amiga's power with such functions as 24-bit color separations, bezier curves, high-resolution output, and PostScript support. One newcomer to this high-powered line-up, ProVector ($299.95, Taliesin), offers structured drawing that helps to place the Amiga even more firmly in professional publishing circles.

Unlike bit-map paint programs such as DeluxePaint III, structured-drawing packages like ProVector depend on your printer's capabilities when it comes to output. Bitmaps are usually output at the same resolution at which they were created—anywhere between 35–75 dots per inch. (The least expensive nine-pin, dot-matrix printers available today can print at least 180 dots per inch.) Therefore, because ProVector takes maximum advantage of your printer's capabilities, the better your printer, the better your output.

Another advantage of structured-drawing programs is that they let you alter images simply by editing defined objects rather than erasing and redrawing pixels. This makes it easier to modify structured drawings.

Breakneck Speed

ProVector's most striking feature is its speed. In order to take advantage of your system's configuration, ProVector



ProVector's power can really take you places.

comes in three flavors: standard 68000, floating point for 68000s with a math coprocessor (optional), and a 68020/030 version with integer math. Noncopy-protected ProVector comes with easy-to-follow instructions for hard-drive installation. Compared with Professional Draw, the most prominent Amiga structured-drawing program, ProVector is possibly twice as fast during screen redraws on a standard Amiga. On an Amiga with an 020/030 board using the 020 integer version, the difference in speed is even more dramatic.

ProVector includes many of the drawing tools you would expect to find in a structured-drawing program: freehand draw, ellipses, boxes, polygons, a selectable grid, snap to grid, magnification, and the like. ProVector lets you import any IFF image and turn it into a structured drawing by tracing over it. As with other drawing packages, control points define curved lines or how lines interconnect. By editing these control points, you can move or change curve slopes.

You can outline objects with a definable line pattern, fill them with color or a pattern, or leave them unfilled. In addition, ProVector offers a multitude of dithering patterns to simulate colors on the screen. You can define fills with the pattern editor, or you can use existing artwork, highlight the objects you want, and then have ProVector create a structured fill pattern.

Two drawing tools unique to ProVector are smooth polygon and straight curve. With smooth polygon, you can create polygons of any shape by using only straight lines, and then have ProVector render the polygons as curved shapes, interpolating curves between designated control points.

I found this function, along with the program's ability to define arcs with the ellipse tool, to be an adequate replacement for the bezier curve function in Pro Draw's pen tool. When you draw curves with the straight-curve tool, ProVector renders a half-circle, based on four points it expects you to define. I found this tool a bit cumbersome, however, when matching curves within imported IFF images.

Text Insertion

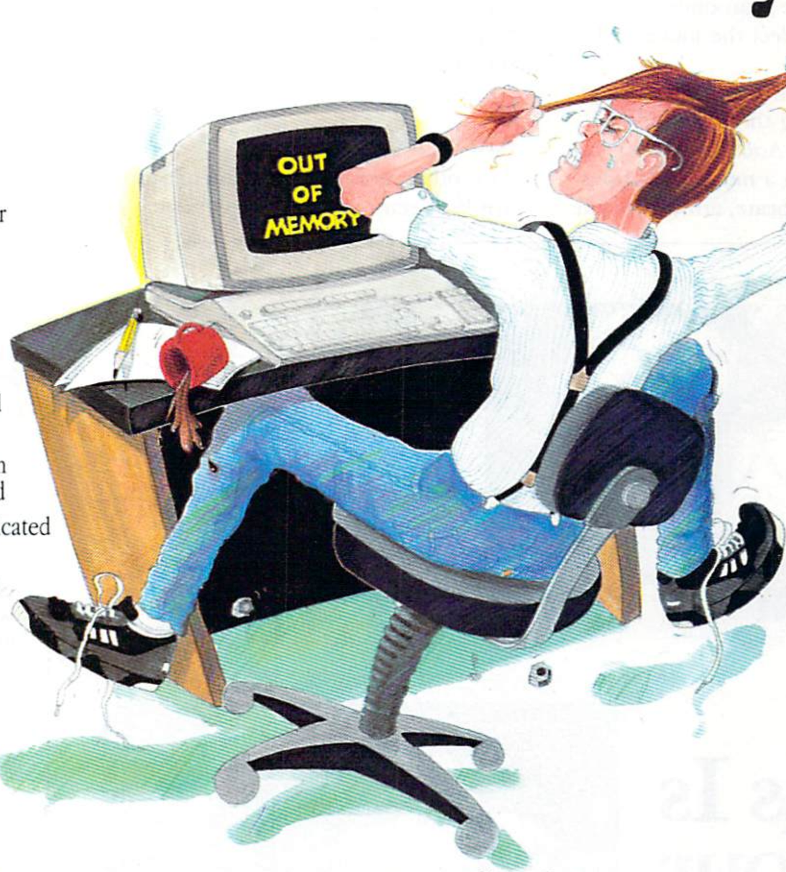
For inputting notes or other written material, double-click the text tool to select font type and size. The latest version of ProVector (at press time) includes only stroke or line fonts. Taliesin promises it will send all registered owners outline serif and sans serif fonts when finished. In addition, the company's policy is to make available to all registered owners a utility to convert PageStream fonts into ProVector fonts.

Once text is placed on the page, you can manipulate it like an object, and you can also still edit it (e.g., if you spell a word wrong, you can fix it without recreating it).

ProVector's object-manipulation tools are pretty much the norm: click-and-drag "lasso selection," group and ungroup objects, front-to-back and back-to-front, clone, rotate, and stretch. The delete function, aptly named "Kill," sports a novel skull-and-crossbones icon. These drawing and object-manipulation tools are in a movable window running along the side of the screen. When you double-click the rotate and stretch tools, a requester pops up in which you can manually input numerical information.

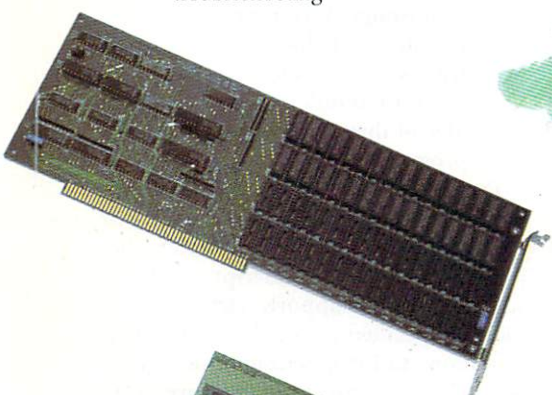
One thing I found annoying, however, is that none of the tools remain selected ►

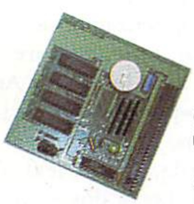
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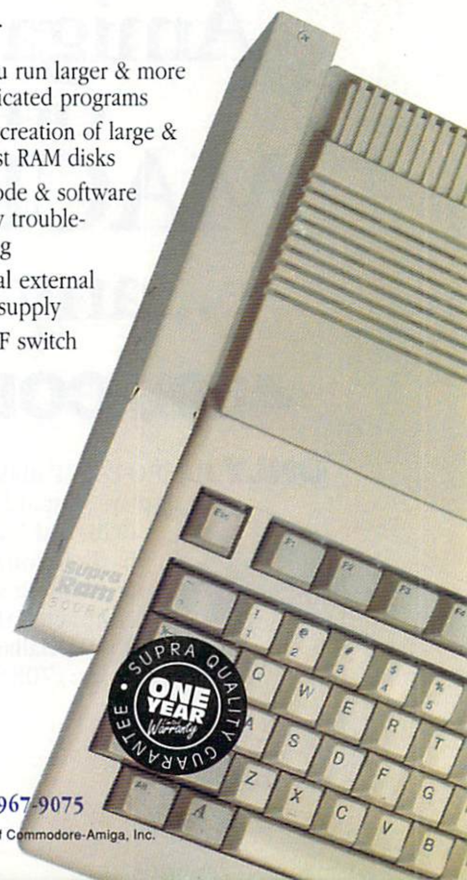


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once you have used them—with the exception of the selection tool itself. This means that if, for instance, you want to move an object more than once, you must go back and select the move tool again each time.

Editing control points is simply a matter of double-clicking the right mouse button over a point. Another pop-up requester appears with a menu of options that allow you to relocate, add, or delete points, as well as to create corner points from curve points. Unfortunately, it appears that the only way to adjust the slope of a curve is to move its control point (which changes the size of the object as well) or to redraw the curve.

AREXX AND LAYERS

Two other features worth mentioning are ProVector's ARexx implementation and the layers function. Through ARexx scripts, you can either share information between ProVector and another program or create your own custom tools and macros. You can program the RX button (the ARexx tool) in ProVector's tool bar to perform specific rotations, shear an object to a designated degree, create new objects, or do anything to make repetitous functions less time-consuming. The program comes with a number of useful demo scripts.

ProVector's layers function is also unique to Amiga drawing programs. With it, you can define objects in identified layers so you can lock, unlock, or hide them. In addition, you can change the order of these layers much as in a CAD program.

ProVector has other features almost too numerous to mention: the ability to join subpolygons to make complex objects with cut-outs, PostScript and EPS support, HPGL support, partial and full plots to specified printers, variable magnification, and magnetization of objects. Overall, ProVector, which requires 1MB of RAM, is a fine addition to the Amiga lineup of desktop-publishing/structured-drawing programs.

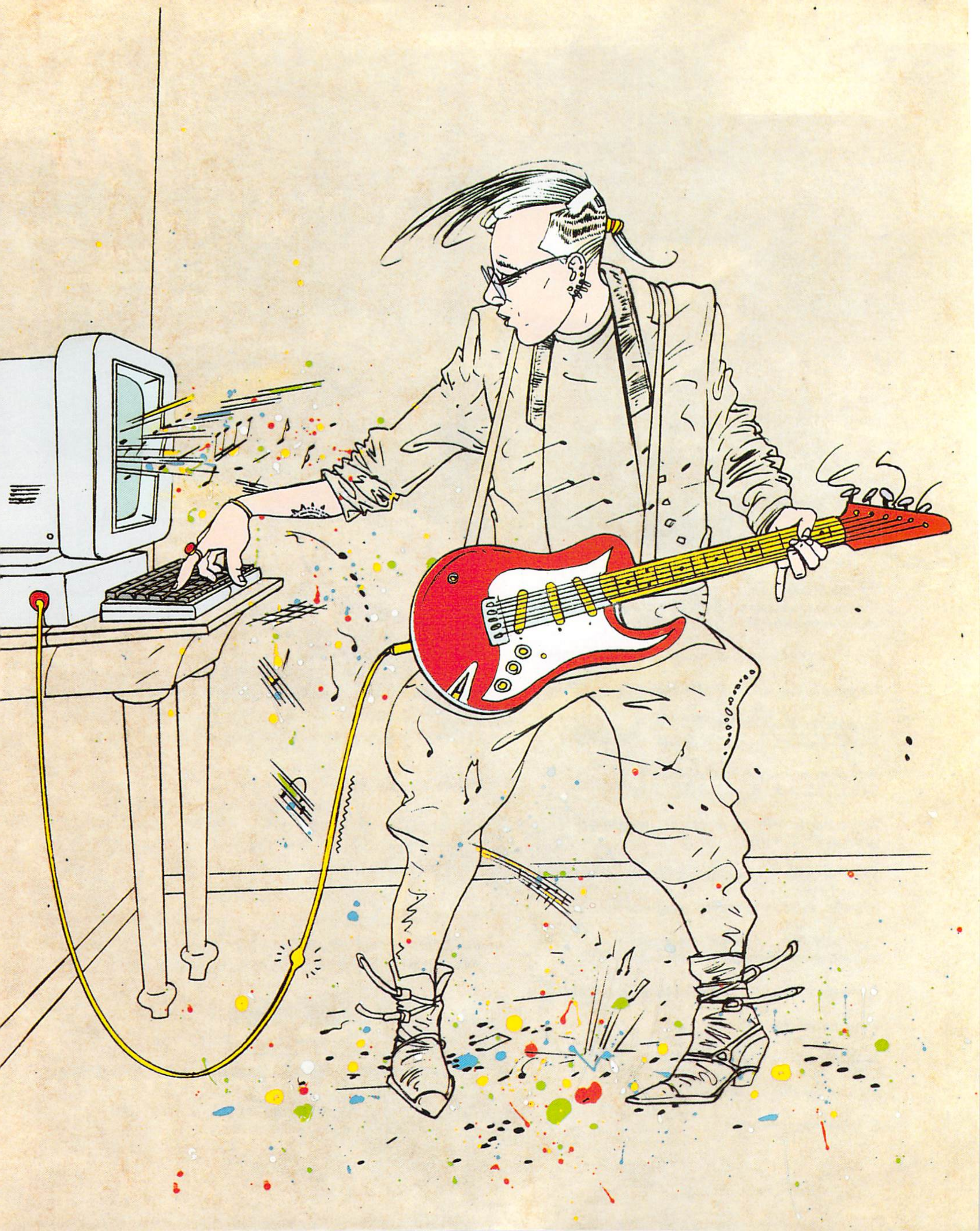
On the down side, limited text support, limited fonts (as of this writing), cumbersome object selection/manipulation, the lack of curve-slope adjustment, and no auto-tracing of bitmaps are all flaws I hope Taliesin will address in upcoming releases. The company does promise that subsequent releases of both PageStream and Saxon Publisher will directly support ProVector's file format. This support would undoubtedly make ProVector the structured-drawing program of choice for professional Amiga desktop publishers.

Continued on p. 90.

YOUR TURN!

ProVector and Saxon Publisher provide a very powerful combination. Saxon imports ProVector's files perfectly. The program is really of professional caliber.

Mark Needham
Louisville, Kentucky



Talkin' Electronic Music Blues

By Michael Hanish

Come here, doctor,
Come here quick;
This samplin', synthesizin', sequencin' talk
S'about to make me sick!

Digital refrain
S'runnin' all 'round my brain.



You probably won't see Dave Van Ronk abandon his Martin D-12 for a MIDI sequencer, but if you want to use your Amiga to croon a tune or play back a sound track, you'll need to learn the lingo.

YOU PROBABLY ARE aware that the Amiga is capable of all sorts of amazing musical things. Yet, somewhere between "file formats" and "sample rates," you may find that the terminology involved in making music electronically has become one big jumble and, suddenly, music is the farthest thing from your mind. You could take a walk in the woods to clear out your brain, or you could stick with us for a bit while we demystify the jargon.

We will, by necessity, be covering a lot of ground at "presto tempo." To make things easier, we have included a few helpful references. Take a look at the "Electronic Music Glossary" for capsule definitions of terms that appear in boldface in the text. For related information and reviews of specific Amiga music products, check out the "*AmigaWorld* Music" reference box. For information about contacting the manufacturers of products mentioned in the article, consult the May "Manufacturers' Addresses" list on p. 108.

SOUND BY THE NUMBERS

When we talk about sound, we are talking about a physical phenomenon. Changes in air pressure, moving like waves in water, make the eardrum vibrate in sympathy. After a few more sympathetic vibrations along the way, we hear a sound.

There are no little beasties inside your Amiga, flapping their wings to make sound waves. Instead, through the **sampling** process, the computer "listens" to a sound and "records" it—turning it into **digital** information or a series of bytes it can store. This stored data—described purely by numbers in this state—is then converted to **analog** form, through which it can be turned into sound again.

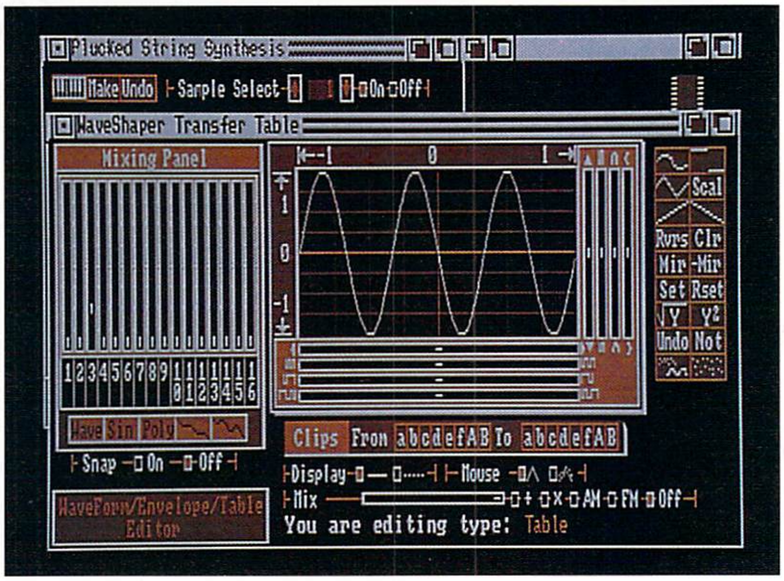
Specifically, sound is produced on the Amiga by four digital **oscillators** on the Paula chip. Each of these can play back one digital **waveform**, convert it into an analog waveform, and send it out through one of the four (two right and two left) Amiga audio channels to your monitor or amplifier. (If you haven't already done so, try hooking up your Amiga to a stereo and give a listen.)

Besides **sampling** sounds from the outside world, the Amiga can also create, or **synthesize**, sounds directly on its own—again, a digital process whereby synthesized waveforms are stored as a file by the computer. ►

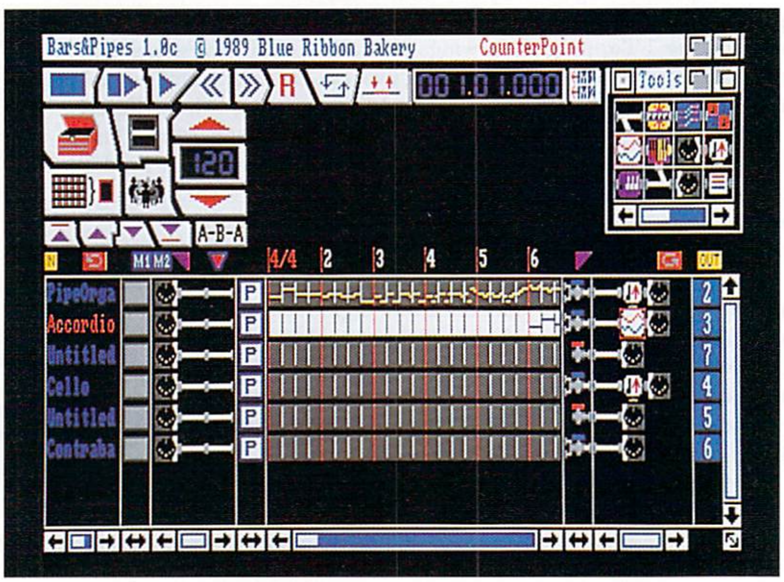
ILLUSTRATED BY ISTVAN BANYAI

Betwen sampling and synthesizing, it would appear that there are few limitations on the kinds of sounds that can be created or recorded and then played back on the Amiga. This is not exactly the case, however. Although the Amiga provides some fairly sophisticated means for recording and playing "sounds," remember that each of the four oscillators can play only one sound at a time. To play a simple four-note chord requires all four Amiga voices, and each time a new note is triggered, one of the previous notes is cut off.

Imagine a drum kit consisting of a bass drum, snare, tomtom, and cymbal. Playing a drum part would take up all four oscillators, leaving none available for bass, electric kazoo, or any other instrument in the band.



With Synthia II you can create or modify a whole range of instruments.



Bars and Pipes is a versatile MIDI composition/sequencer program.

Another very important limitation of Amiga sound is that the hardware that converts the digital information into an analog waveform resolves to only eight bits. The more bits a system uses, the larger the size of the samples it can take (thus allowing for a higher **sampling rate**, which in turn leads to a more accurate, higher-quality reproduction of the sound).

There are a number of other hardware limitations on the Amiga's sound- and music-making capabilities, but these are a little too complex for this article. Suffice it to say that the Amiga is highly functional for reproducing sound effects, speech, sound requirements for arcade games, and the like, and, left only to its own built-in circuitry, it can produce simple but enjoyable music. Later on, however, we will see how **MIDI** can help us enhance the Amiga's musical accomplishments in more sophisticated and satisfying ways.

How About a Few Samples?

For now, let's see what we *can* do with the Amiga in the way of sound and music without the assistance of MIDI. You will most likely find yourself using Amiga sound in two basic ways: as a **sample** for playback (like a sound effect) or as an instrument that you can create and control to make music. Playback samples can be quite large in memory and on disk; they are, in effect, short recordings that can be edited and played back. One way of solving the drum-kit problem above is by sampling the whole kit playing at once and then simply playing the sample back over and over through one channel.

Instruments are a refined and special class of samples. Because an instrument is most often meant to play pitched music (see **pitch** in the glossary), more attention must be paid to its **envelope**, intonation (relative pitch), and range. Instruments are often **multisampled** to emulate the fact that the **timbre** of **acoustic** instruments changes in relation to how high or low in pitch they are. **Looping** is another key feature of instrument samples; it is a convenient way to conserve memory while simulating the "sustain" portion of the sound of an acoustic instrument.

Computers store sampled or synthesized sounds as digital information in special sound files. When the Amiga samples a sound, it stores the sound data in a standard file format, 8SVX, which is part of the IFF (Interchange File Format) and which allows for looping and multisampling. All developers of Amiga music and sound programs are well aware of the **IFF-8SVX** format, but while it offers a standard around which they can design software, like all common denominators, it doesn't answer every need, and it sets rather rigid—and not always very musical—limits on the ways you can arrange and loop samples.

Programs that can be used to create and/or modify instruments (but not to digitize), such as Sonix ($79.95, Oxxi) and Synthia II ($124.95, The Other

Guys), have their own optimized formats for more detailed and life-like sounds. Using the IFF-8SVX standard as the interchange format, you can work on samples in these and other programs, exploiting their particular strengths. Each program has its own filename extension, which must be used to enable the program to load and use the sample as an instrument. All programs on the market deal, in one way or another, with the IFF standard. For specific file-compatibility guidelines, consult the individual program manuals.

Getting realistic sounds from samples is a tricky business, involving much tweaking and fine adjustment. My favorite for instrument creation and special effects is Synthia II, as it offers many different kinds of synthesis and a wide range of effects. I often start making an instrument there, and then port it into AudioMaster III ($99.95, Oxxi), a very capable sample editor, for fine tuning and "resampling." For the best quality of sound, use the highest sample rate possible. Doing so, unfortunately, uses up more memory; resampling, in effect, rerecords the sound at a lower rate, saving memory and retaining fidelity.

Sound Takes

You can get sounds into your Amiga in two ways: buy them or digitize them yourself. Most composition programs come with a selection of ready-to-use in- ►

Electronic Music Glossary

Acoustic A sound made by purely physical (as opposed to digital) methods. We can hear only acoustic sounds.

Analog Waveform An electronic waveform that resembles the sound it creates. All sound waves are analog phenomena—continuously changing physical occurences that can be measured, modified, or otherwise manipulated.

Controller A hardware device, such as a keyboard or drum pad, that is used for sending musical "commands" to a synthesizer.

Digital Described by numbers only; not actually existing in the physical realm.

Envelope The characteristics or shape of a sound, roughly consisting of attack, decay, sustain, and release.

Frequency The number of complete sound waves per second produced by the sounding object. Frequency is expressed in kilohertz (KHz); a wave vibrating at one KHz is completing 1000 complete wave cycles per second.

IFF-8SVX Interchange File Format for one-shot sampled sounds.

IFF-SMUS Pronounced "smuse," SMUS stands for Simple Music Score and is thus an Interchange File Format for musical scores.

Line-level The strength of an audio signal sent directly to an amplifier and speakers.

Looping Repeating a small section of a sample to simulate the sustain portion of a sound's envelope.

Microphone In this case, an audio signal that generally needs preamplification before it can be sent to an amplifier and speakers.

MIDI Stands for Musical Instrument Digital Interface. A set of protocols for synthesizers to communicate with each other and with computers.

Mono Short for "monaural," literally "one ear," it usually refers to sound emanating from a single source.

Multisample Different sounds in each octave of an instrument file; used to reproduce changes in timbre as pitch gets higher.

Oscillator Something that vibrates, usually electronically, to produce a sound.

Pitch The frequency (see above) of sound waves translates into pitch. The higher the frequency of a wave, the higher the pitch of the sound you hear. A computer can transpose the pitch of a sound so the sound can be played as a musical instrument.

Sample A slice of sound recorded digitally, using numbers to describe the sound.

Sampling The process by which a computer "listens" to a sound and turns it into a series of bytes it can store.

Sampling Rate The rate at which the computer listens to and takes a piece of a sound. The higher the rate, the better the resolution of the sound—the better it "sounds."

Score A musical notation showing all the parts of an ensemble simultaneously.

Sequencer A program allowing you to record MIDI data (notes, controllers, and so forth)—in either real time or step time—and then to manipulate that data in order to realize a musical performance that utilizes MIDI-controllable instruments.

Stereo A sound emanating from two sources in an attempt to simulate how people actually hear.

Synthesize To create a sound using purely electronic (as opposed to acoustic) methods.

Timbre The tone color or quality of a sound.

Waveform The shape of a sound, in the sense of a graph showing changes in signal strength over time.

struments, the best being those from the Internal Sounds Kit ($59.95) add-on module to Bars and Pipes ($249.95, Blue Ribbon SoundWorks) and "M" ($199), from the famed KCS sequencer people, Dr. T's Music Software. There are also a number of separate collections available from such companies as Eyeful-Tower and WaveTable, each of which is a good source for more esoteric sounds—both acoustic-like and synthetic.

For the do-it-yourselfers, there is a large selection of audio digitizers (sound samplers) on the market, all of which are reasonably priced. They are all hardware/software combinations; the hardware usually plugs into the parallel port, although some models still send data into the computer through the joystick port. Avoid the latter, as their sample rates and sound quality are quite low.

To determine which is best for your system, ask the following questions, among others, when evaluating the hardware and software: What purposes will the samples be used for? (Lower rates are okay if game sounds are the only purpose.) How well constructed is the hardware and how well does it connect to the input port? (A flimsy connection can destroy the sampler as well as the input port.) What are the audio inputs on the hardware (**microphone, line-level** audio, type of plug, and so forth)? How does the software feel and fare for controlling the sampler and editing samples? Can input volume be adjusted conveniently? Does it sample in **mono** or **stereo**, and is this important for your purposes? Can you afford AudioMaster III (certainly the best all-around sample editor on the market)?

While you can play back one-shot sound effects in a relatively simply fashion, combining instruments into a score requires a composition program. These can also be thought of as **sequencers**, because they store, arrange, and transmit triggering information to the sound-producing device. Consider them in terms of this compound metaphor: Sequencers are a mixed marriage of word processor and tape recorder. Music is a language like English, except for two things: First, notes, chords, melodies, and rhythms—not words—are used to convey information and ideas; second, the spelling and syntax in music are more consistent and easier to master.

You can manually enter and edit musical information one step at a time, or you can have it entered in a flow of information from a **controller** (keyboard, wind, and so forth) via MIDI (more about MIDI in a moment). The software can display this information in conventional musical notation (notes and staves), graphically, or as an event list (a text listing pitch, duration, and other parameters at each moment in musical time)—or as a combination of all three. For example, Deluxe Music Construction Set ($99.95, Electronic Arts) displays only in traditional notation; Music-X ($299.95, MicroIllusions) allows note entry and editing in either the list system or a graphical representation of pitch versus time; the soon-to-be-released Bars and Pipes Professional ($379, $99 upgrade fee to owners of the existing version, Blue Ribbon SoundWorks) reportedly will give the user the choice of all three forms.

Many sequencers take the tape-recorder metaphor one step further by providing the user with familiar ►

AmigaWorld Music

Below are titles of articles on Amiga music and reviews of Amiga music products that were published in previous issues of *AmigaWorld*.

Articles

"Sound Design," Mastering Multimedia, Mar. '91, p. 72.
"MIDI Sequencers," Dec. '90, p. 43.
"Patchwork" (editor/librarians), Mar. '90, p. 26.
"Now Hear This" (sampling tips), Mar. '90, p. 20.
"Sizzling Sounds" (sound samplers/audio digitizers), Oct. '89, p. 48.
"The 'Sound' of Music" (Amiga sound/MIDI music), May '89, p. 16.
"76 Trombones. . ." (MIDI), Jun. '88, p. 30.
"Amiga Jamboree" (buyer's guide), Jun. '88, p. 44.

Reviews

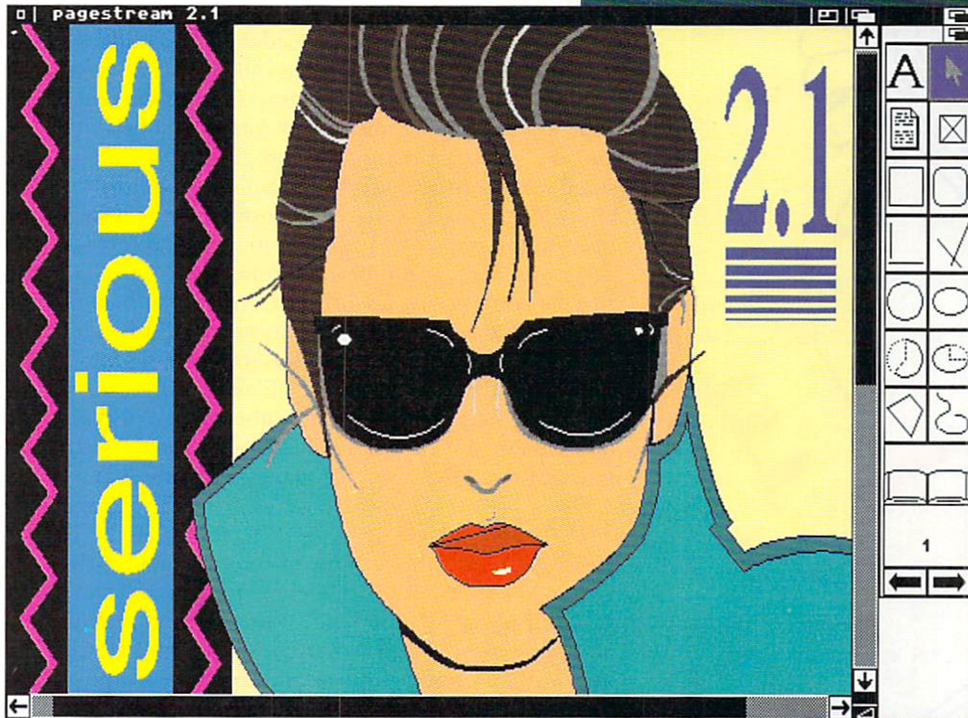
"AudioMaster III," Mar. '91, p. 13.
"Trax," Feb. '91, p. 20.
"Music-X Jr.," Feb. '91, p. 20.
"Synthia II," Dec. '90, p. 122.
"MIDI Quest," Nov. '90, p. 98.
"Tiger Cub," Oct. '90, p. 14.
"A-Sound 2.0," Oct. '90, p. 100.
"Master Sound," Aug. '90, p. 80.
"KCS 3.0 Level II," Jul. '90, p. 80.
"Performance," May '90, p. 72.
"Synthia Professional," Apr. '90, p. 14.
"Bars and Pipes," Apr. '90, p. 84.
"MIDI Sample Wrench," Mar. '90, p. 80.
"Master Tracks Pro 3.0," Jan. '90, p. 62.
"Music-X," Nov. '89, p. 18.
"The Copyist Professional," May '89, p. 14.
"M," Apr. '89, p. 12.
"MIDI Magic," Mar. '89, p. 14.
"MIDI Recording Studio," Feb. '89, p. 16.
"Dynamic Studio," Jan. '89, p. 20.

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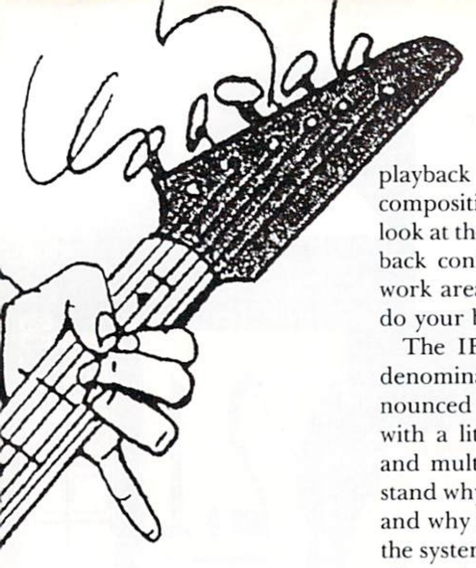
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Feature Comparison	Professional Page 2.0	Saxon Publisher 1.1	PageStream 2.1
PostScript Font Compatible	No	No	**Yes** *even to dot matrix printers!*
Compugraphic Font Compatible	Yes	No	**Yes**
Professional Draw Import/Edit	Yes/No	No/No	**Yes/Yes** *edit ProDraw clips in PageStream!*
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Draw Bézier Curves	No	Yes	**Yes** *draw Bézier curves and Bézier polygons*
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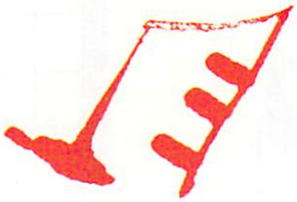
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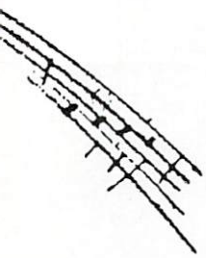
playback and recording controls. When evaluating composition programs for purchase, take a long, hard look at the interface, including notation display, playback controls, and the overall layout. This is your work area, and you have to feel comfortable in it to do your best work.

The IFF standard also provides for a common-denominator track-file format called SMUS (pronounced "smuse"). **IFF-SMUS** is accepted, sometimes with a little negotiation, by all Amiga composition and multimedia presentation programs. To understand why there needs to be a common denominator, and why it is rarely sufficient, consider all the details the system must be told in order for it to play a piece of music: For each note to sound, there must be specific instructions about what voice is to sound, what pitch it is to be, when it is to start and stop, and how loud it is to be. In addition to this basic information, if there is any hope of making the music sound life-like, the system must also receive instructions about any dynamic changes (volume, pitch, intensity, etc.) that the note makes over time.



The MIDI Solution

Needless to say, this is a lot of information for the system to keep track of and to send to four oscillators that can play only one note's worth of information at a time. Suppose there were a way to send all the note on/off, timing, control and articulation information to a sound-producing source outside the computer? The Amiga could then concentrate simply on keeping track of all the data for control, and the user would not be limited to playing only four notes at a time. There would need to be some standard through which computers could communicate with synthesizers, as well as a method to send all the necessary data fast enough.



That's where MIDI comes in. The development of the Musical Instrument Digital Interface standards about ten years ago proved to be the solution to most of these problems. On the hardware side, MIDI data is passed between the Amiga and a MIDI-equipped synthesizer/sound module through an interface attached to the Amiga's serial port. Data can be transmitted in both directions: The computer sends all the control information necessary to play the piece of music and receives such data when the sequencing software is in record mode.



Included in the MIDI specifications are provisions for 16 discrete address channels (think of them as telephone lines, where each synthesizer has its own phone number); 128 different kinds of controller messages (including note on/off, pitch bend, velocity, program change, and so forth); timing and synchronization information; and a standardized sequence file format. To keep the data stream as compact as possible and flowing as fast as possible, not all the controller information needs to be sent all the time, but only when something changes.

While the MIDI-sequence file format provides a way to move sequences among different composition programs, it is not a perfect solution to the Amiga musician's dilemma. Although it provides for much more articulation and performance detail than the SMUS format, it is still a lowest common denominator and not nearly as detailed as each program's own native format. Nonetheless, it goes a long way towards turning the Amiga into a serious music-making system.

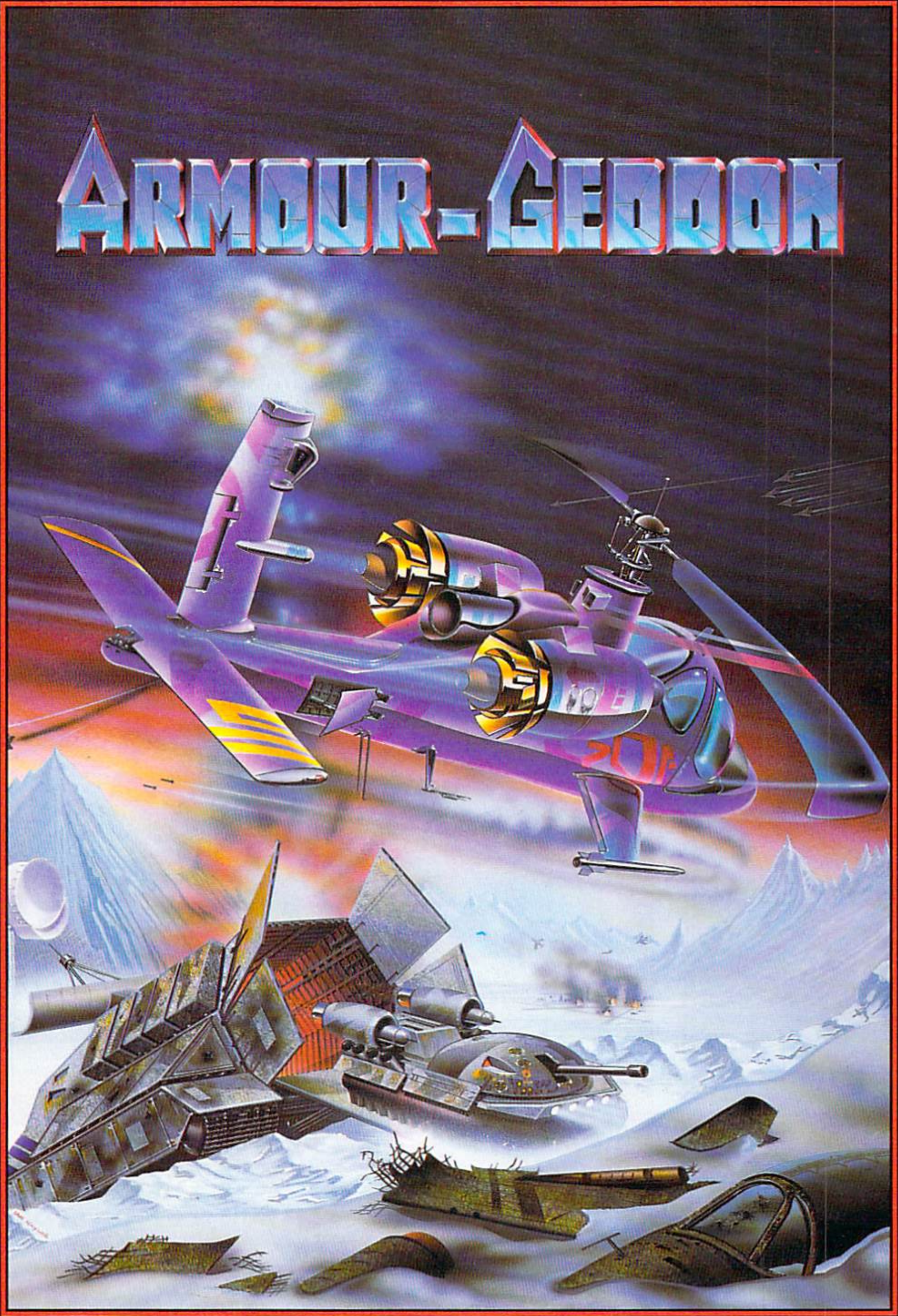
One of the great advantages of MIDI is that it provides a way to use sounds of much higher quality than the Amiga itself is capable of producing. By controlling external sound sources, the Amiga's processing time is freed up to multitask more effectively, perhaps simultaneously playing an animation. And the cost of these external modules has dropped in recent years, while their sound quality has improved dramatically.

As you might expect, there is no standardization of the way voices are arranged in synthesizers. They are always given numbers, but voice 27 on one synth might be a flute, while the same number on another might be the sound of a helicopter landing. This fact decreases the portability of your music if it is produced externally.

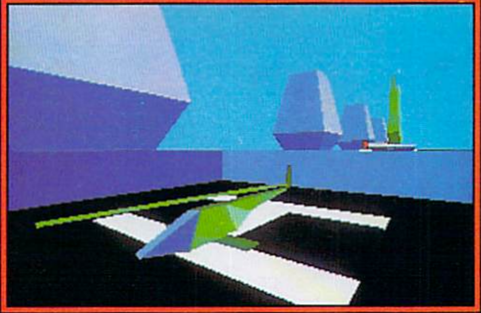
Many people use composing programs to prepare pieces for live performance. By working out numerous compositional details in advance, you can significantly reduce both rehearsal and copying time. When a composer writes a piece, the program produces a master copy, or **score**, showing all the parts simultaneously. The conductor also uses the score to direct and control the piece in performance; the players see just their own parts. Programs such as Deluxe Music Construction Set, The Copyist Professional ($275, Dr. T's), and Bars and Pipes Professional allow for score printing and for parts to be extracted and printed. You can also edit display and design with most of these programs. Printing quality will depend both on the printer's resolution and how well each program handles the notation graphics.

Whether you are delving into music and sound on the Amiga for the first time or trying to get deeper into it, try to think of the often confusing array of electronic-music terminology as it relates to the whole system and specifically to what you are trying to accomplish. The terms are meant only to describe the thing itself, so by understanding, for example, why the computer must talk with the synthesizer, you will understand the basic concepts of MIDI. Remember: It's the music you make that is important, not the words you use to describe it. ■

Michael Hanish uses an Amiga for video, graphics, and music with both his performance group and his adult literacy students. He writes frequently for AmigaWorld *on multimedia subjects. Write to him c/o* AmigaWorld, *80 Elm St., Peterborough, NH 03458.*



ARMOUR-GEDDON







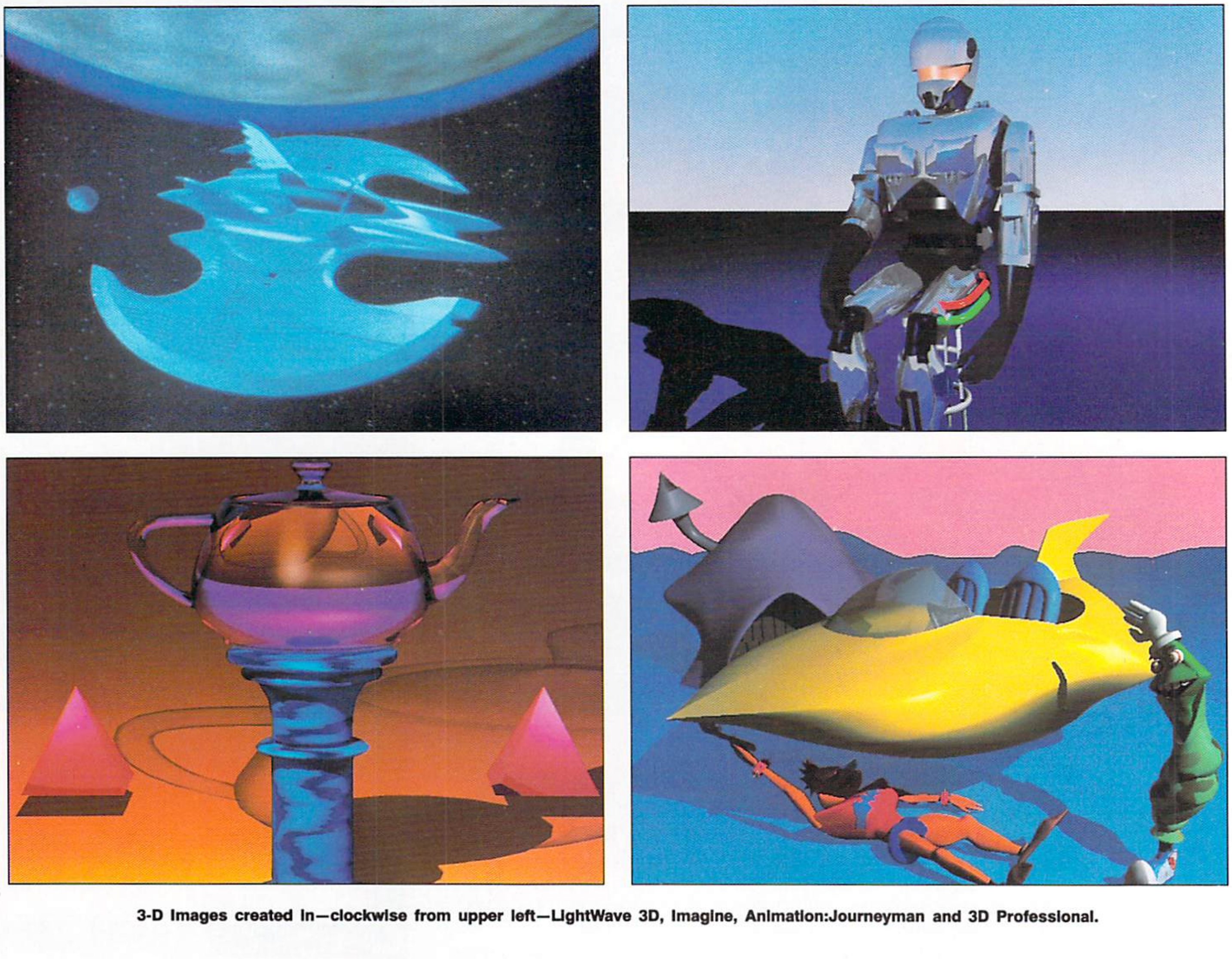
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NAME: FIGHTER
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RESEARCH AND DEVELOPMENT
HQ
PREV
NEXT
INFO/GRAPHIC
DEVICE 6
FIGHTER
WEIGHT: 19000 KG
ENGINEERS
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AMIGA GRAPHICS: THE NEW WAVE—1

Four new 3-D graphics programs broadsided the Amiga market recently. Every one of them is revolutionary, each is very different from the others, and all are so "state-of-the-art" that 3-D graphics will never be the same again.



3-D Images created in—clockwise from upper left—LightWave 3D, Imagine, Animation:Journeyman and 3D Professional.

The 'State' Of 'Art' 3-D

By Eric Daniels

Four new Amiga 3-D graphics programs have hit the market over the past few months, all claiming to be professional, state-of-the-art 3-D animation packages. Each has good reason to make that claim. The problem with comparing them for this review, however, is that the "art" that each claims to be the "state" of is made up of a lot of different components. (Read the "Getting Started" sidebar to get a feel for how 3-D animators like myself approach the whole discipline, how they organize projects into different phases, and why they recognize—by necessity—that different programs excel in certain aspects of the job but not in others.)

The differences among these four programs, therefore, are significant. Which one you buy will depend on what sorts of things you intend to do with it. Each seems to be geared to a different segment of the marketplace, and each was conceived, or evolved, in a different way.

Although different from its predecessors, **Imagine** ($350, Impulse) began life as Silver, became Turbo Silver, and still lives today as Turbo Silver 3.0 SV. **3D Professional** ($499.95, Progressive Peripherals) started out as an in-house 3-D tool years ago. **LightWave 3D** (bundled with the Video Toaster, $1595, NewTek) is sort of a descendant of Oxxi's (formerly Aegis') VideoScape 3-D and Modeler 3-D. **Animation:Journeyman** ($500, Hash Enterprises) is the latest in that company's long-running series of animation products dating back to Animation:Apprentice. ►

Getting Started

The 3-D Animator at Work

SOMEDAY WE WILL be able to put on our interactive 3-D headsets and gloves, walk around in our own "artificial-reality" movie studios, and shout into our voice-recognition microphones: "Lighting! Move that arc lamp back over there a bit more so I can see a glint off her right cheek. . .Construction! This set looks puny—scale it up about so much. . .Camera! I want a slightly more somber mood—could you truck in here a bit slower this time?. . . Effects! Crank up those smoke machines and give me more of a blue haze in here. . .Actors! Gather 'round—I want to discuss your motivations for this scene. . ."

Except for the fantasy set and all the shouting, this *is* essentially what 3-D animators do when they animate a scene. We keep in our minds a three-dimensional image of our scene, as though it were in a real space with real lights and cameras. Unlike normal filmmaking, though, there is no team of experts on hand to take care of details; we have to function as everyone from director to stagehand. This is a blessing as well as a curse: We do have complete control over the scene. That control, however, comes at the cost of having to concentrate on so many details at once that it is often easy to forget something important (such as the main idea!).

To avoid overwhelming yourself, it helps to organize your project into three main phases: modeling, choreography, and rendering. These phases are all separate thought processes—for the computer as well as for ►

(For details on how to contact the developers of products mentioned in this article, consult the May "Manufacturers' Addresses" list on p. 108.)

Imagine

If, like a still-life photographer, your main goal is to create pretty pictures of great-looking objects, then a strong modeler and renderer will be most important to you. These are Imagine's strong points; it has some of the most powerful and intuitive (but poorly documented!) texture-mapping capabilities I've ever seen in any program—even expensive high-end professional systems. You can assign up to four different images to represent the color, filtering, reflection, and bumpiness of an object, and you can attach any of several built-in textures, such as brick, wood, marble, and so forth. Once you get the hang of it, you can make a convincing creation of just about anything with the tools in this program.

The main modeler, called the Detail Editor, is very powerful. It includes all of the standard features you might expect, plus special grouping capabilities, unique magnet tools, powerful Boolean and mold functions, and useful keyboard equivalents for many of the most often-used commands. It is in the Detail Editor that you assign the attributes to each object, including the interactive alignment of your image maps! Every time you move, rotate, or scale something, you have the choice of "eyeballing" it or punching in the numbers you know to be correct.

One possible cause of confusion in using the Detail Editor—or any of the other Imagine modules—is the difference between "pick" and "select." If an object is "picked," it is not necessarily "selected," and vice-versa. "Select" is simply a method of highlighting objects, one at a time, until you find the one you want to "pick." At that point choose "pick select" from the menu. Got it?

Imagine contains an excellent Forms Editor, which allows you to create wonderfully organic shapes quite easily. By manipulating the front and side silhouettes of what starts out as a generic sphere, as well as the top view of a slice of that sphere, you can create almost any amorphous shape you can imagine—and many that you can't!

The choreographer of this program, called the Stage Editor, is Imagine's weakest spot. It looks good and feels solid, and it does everything it sets out to do, but at times it's a bit unfriendly. You must manually type in many things, such as the colors of the

you—so in many 3-D packages these functions are separated into different modules, if not entirely separate programs.

1. Modeling—In this phase, you create the objects from which you will assemble your scenes. Most object-creation programs are polygon-based, which is another way of saying that everything has little facets on it. It is also in the modeling program that you normally assign textures to the object. Without decent object editing and texture capabilities, your objects run the risk of looking too simple, too "computery."

2. Choreography—Here is where you place all the building blocks (camera, lights, props, actors, and so forth) in their proper positions. You must also tell your objects/actors exactly how and when to move. This is the phase that most resembles directing a movie. Without good choreography, your animations may be stiff, confusing, underlit, or just plain unexciting. With good choreography, however, unappealing objects rendered poorly can still be made entertaining. A good choreographer should also allow for the possibility of importing motion data created elsewhere.

3. Rendering—This involves the time-consuming mathematical simulation of something that in reality happens in a 24th of a second, automatically, whenever a camera's shutter is open: An astronomical number of photons cascade out of all the light sources and bounce a zillion times in a million ways—with only a tiny fraction of them ultimately passing through the lens of the camera and hitting the film. No mathematical model yet devised can simulate this process with complete precision, but hundreds of shortcuts have been developed—some faster than others, some more realistic than others. Ray tracing is just one of them.

If there were a well-established Amiga standard for 3-D object and motion descriptions (similar to the IFF standard for 2-D images), programs could be designed to specialize in, and excel at, one particular phase. There have been a few attempts at standardized 3-D formats on the Amiga, but due to the different way each program "sees" the world, objects can translate to other programs only to a limited extent. Byte by Byte's Sculpt programs, for instance, must have three-sided facets, whereas 3D Professional can render facets with more than three sides, but only if all faces are constructed in a counter-clockwise fashion!

These "rules" are not as arbitrary as they may seem: Each program is simply trying to take its own special shortcut to speed up rendering. One unique program, InterChange ($49.95, Syndesis) tries valiantly to serve as ambassador to all the 3-D programs—it can convert many object formats into other formats—but it does so with only varying success.

—ED

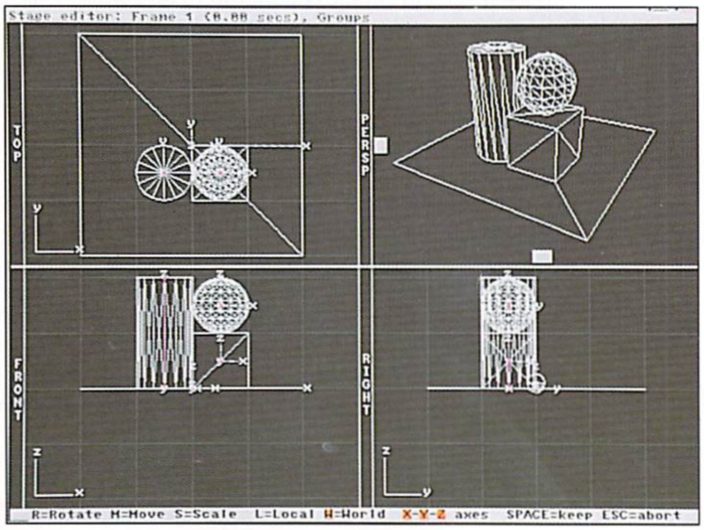


Figure 1. Views from Imagine's Stage Editor.

background, in places where a set of sliders would serve much better. There is also no provision for importing external motion data.

Imagine does provide another choreography-type editor, called the Cycle Editor, which enables you to create character motions much more easily. You can sculpt an entire skeleton, assign an object's filename to each bone, and then animate the skeleton's movement key frame by key frame. Later, you can bring this moving skeleton into the Stage Editor and walk the character around. The Cycle Editor is a unique tool that opens up many possibilities, and it is great fun to use.

Imagine's renderer (controlled from within the Project Editor) can output 24-bit images in just about any size and aspect ratio your heart could desire. Although there's not much control over the ray-tracing algorithm used, the images do come out looking superb. Some of the most stunning animations and images in current circulation have already come from this fine new program.

3D Professional

If you are a programmer creating industrial or educational animations, you may be interested in 3D Professional. It moves simple objects around intuitively, allows for complete script control (with or without ARexx), and incorporates very extensive programmer's data, including fragments of sample code. But despite the inclusion of an excellent manual, a useful VHS tutorial video, and an easy-to-learn interface, there are some limitations: It has a weak object editor (no point-by-point manipulation possible); the objects are confined to a cube into which the camera cannot enter(!); the built-in textures cannot move with the objects; and there is no image-mapping. *(Editor's note: Shortly before going to press, we learned that a 2.0 version of 3D Pro will be released shortly. Progressive plans many new features and revisions, including image- , attribute- , and bump-mapping; the linking of textures and objects; and improved editing and rendering facilities.)*

The weakness of the object editor is compensated for, however, by the fact that 3D Professional can load objects created in Sculpt, VideoScape (GEO), AutoDesk's AutoCADD, Micro Magic's Forms in Flight 1, Turbo Silver, and Mimetics' 3-Demon. It's almost like having InterChange (see the "Getting Started" sidebar) thrown in for free.

Once you have your objects, though, 3D Pro's interface is a beginner's dream: Everything is rendered as a shaded solid, even in the six orthographic views! To move something, you simply use the mouse to drag it where you want it to be. There's a DeluxePaint-style (Electronic Arts) collection of tool icons on the right side of the screen, which makes your initial navigation easy. The attribute requester is huge, with some presets available as a crutch, such as glass, chalk, stone, and porcelain. The algorithmic textures are mostly the typical ones, but there are a few surprises, such as "snowy" and "terrain."

Another surprise is that the program allows you to create fractal trees and landscapes directly, and it provides you with plenty of control over the parameters of these complex objects.

3D Pro does not handle object motion through a separate program. Instead, this is built right into the main program, which some will find comforting. Its simplicity is also reassuring; for example, you can define hierarchies by simply dragging a line from one object to another. You can also create a preview of your animation from any of the six orthographic windows or from the camera window.

3D Pro can, by itself, render fairly nice nonray-traced images. If you want to join the ray-trace rat race, however, Progressive's stand-alone Tracer program is a free update for 3D Pro owners. Tracer offers the most configurable renderer I've ever seen, providing you with complete control over every conceivable bounce a light ray could take. I think of it more as a "ray-tracer construction kit." You have control over how many rays are traced per pixel, how many times these rays can reproduce, whether they are randomly distributed throughout the pixel, how many bounces each ray can take, and so forth. In addition, it allows you to model soft shadows, global haze, depth-of-field, and many other effects.

You can then set up batch files to render multiple images in multiple formats, so you can let those rays trace all night long. You can save the resulting 24-bit images in Pro, IFF, or raw formats. You can also run Tracer as a module that the main program controls. It acts simply as another option when you choose a rendering method from within 3D Professional.

All in all, I found 3D Professional to be a very solid program with fewer crashes than the other three. It breaks no startling new ground (except for the direct fractal creation) and, in fact, seems to be a bit behind ►

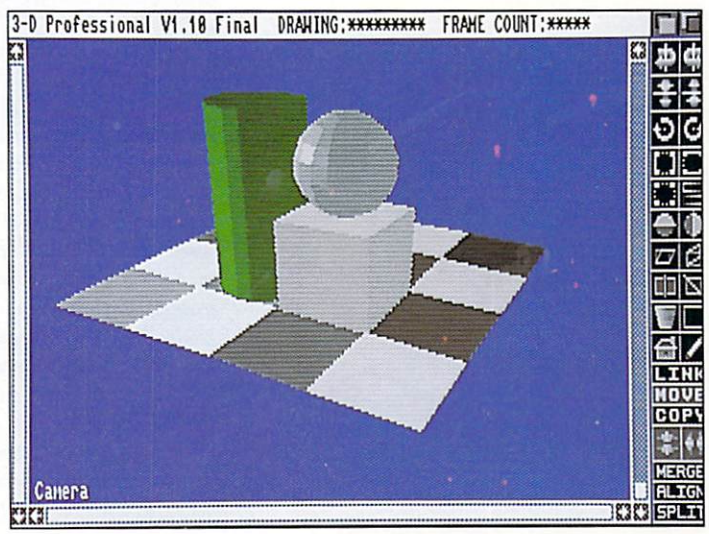


Figure 2. "Camera" view in 3D Professional.

the times in many respects. It is, however, easy to learn and to use, gives nice results, has good technical support, and is difficult to crash. For many professionals, that's all that matters.

Incidentally, I feel this program deserves the award for best packaging. It comes in an enormous box—a green-marbled monolith with embossed gold lettering—designed to convince you (or your friends) ►

Prepare to Render!

I DEVISED THIS setup for comparing the four packages as a simple way to get a feel for each program's rendering capabilities and speeds. To make the test as fair as possible, I avoided using certain unique features that would give any one single program an especially unfair advantage over the others. I wanted to see how each program handled simple things, such as reflection, transparency, and multiple light sources. I tried to keep everything about the tests identical from one program to another, but as this was not entirely possible, please take these images and rendering times as relative indications, not as scientific fact.

The test consists of a small checkerboard, with a chrome ball sitting on a white chalk cube, next to a green glass cylinder. The key light is white, the fill light blue, and I have added a yellow rim light. The output image is a 736×480 IFF24 picture, rendered on my 8MB Amiga 2000 with an assist from Brad Schenck's A2620 accelerator card from Commodore. □

—ED

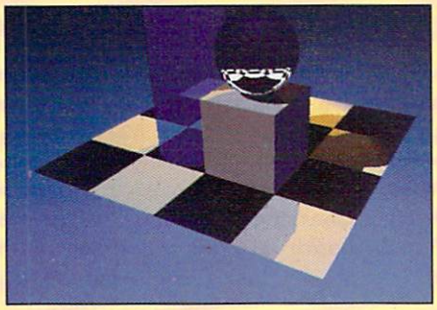


Figure 1A. Imagine
This image was the easiest of the four to render. Images from the other programs needed some tweaking of attributes and parameters to get the effects I was after. This image, however, came out beautifully the very first time. Rendering time was about one hour and three minutes. Imagine does offer a true sphere as one of its primitives, which, had I used it, would have speeded up this rendering. I chose not to for the sake of fairness.

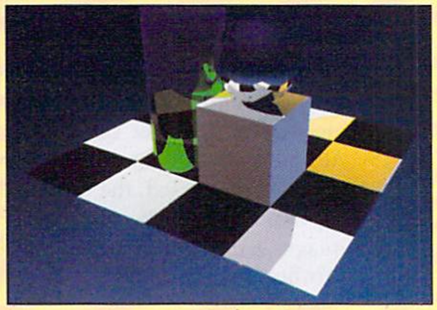


Figure 2A. 3D Professional
The time for this ray-trace was about two and one-half hours. 3D Pro's "Tracer" module, however, is extraordinarily configurable, and I am sure that with the right combination of settings, I could have cut down the time. But, then again, I could have added to the time by deciding to render depth-of-field, fuzzy shadows, fuzzy reflections, and so forth.

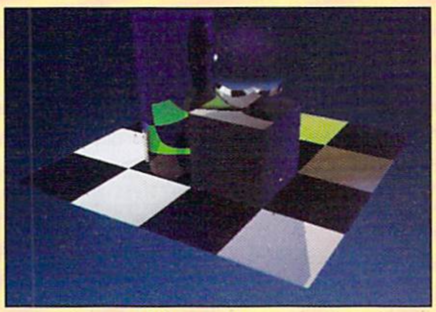


Figure 3A. LightWave 3D
Because LightWave doesn't exactly ray-trace its scenes, refraction is not possible. Blinding speed, however, is. Even with the addition of shadows (a real time-burner for nonray-tracers), this scene rendered in just 29 minutes. Notice that the reflections are not genuine; they are actually an image I created and then "reflection-mapped" onto the shapes. The advantage of doing this is increased speed; the disadvantages are that your reflections will never be exactly accurate and you will not get the reflections of objects in other objects.

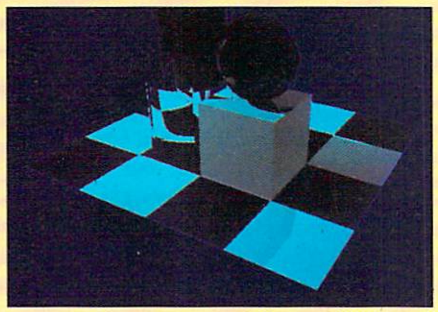


Figure 4A. Animation:Journeyman
This scene rendered in two and one-half hours. Keep in mind, though, that unlike the other programs described here, this one is geared much more for character-type animation than for sterile renderings (remember, your average cartoon character is not transparent or mirrored). Unfortunately, what Journeyman does better than the other programs really does not show up in this test.

that you're getting your money's worth. I'd suggest leaving it out on your coffee table.

LightWave 3D

LightWave 3D, which is bundled with the NewTek Video Toaster, is easily the most professional-looking 3-D program for the Amiga. Its user interface is elegant, powerful, and incredibly easy to master. The overall layout and control logic shines through in the no-nonsense, gray, 3-D-style buttons, which are logically and attractively grouped. Every time I come back to this program, I almost sigh with relief. It just feels like home.

At the left side of the screen, there is a column of buttons that allow you to pop in and out of the various control panels: Scene, Objects, Surfaces, Images, Lights, Camera, Backdrop, and Record. In addition, there are buttons for entering the choreographer screen (called Layout) and for rendering your completed scene. These latter control panels fill the right side of the screen, and each has an assortment of logically grouped string gadgets, buttons, and sliders. You rarely have to consult the manual.

My favorite part of the program by far is the Layout screen, in which you can compose your scenes so intuitively that I find myself coming back to it again and again, just for the fun of it. To move an object, simply select it in a multiple-choice requester (which makes it the current object) and then drag your mouse around. The object is temporarily replaced by a bounding box that slides around in real time. While many programs do this kind of thing, none allows you to do it while "looking through the camera." It is the next best thing to being able to shout at your stagehands.

LightWave comes with some very useful extras. For example, Phonebook is a great collection of starter objects (over 100!), including a spaceship, an office full of furniture, and an entire alphabet. These are endless fun to play with.

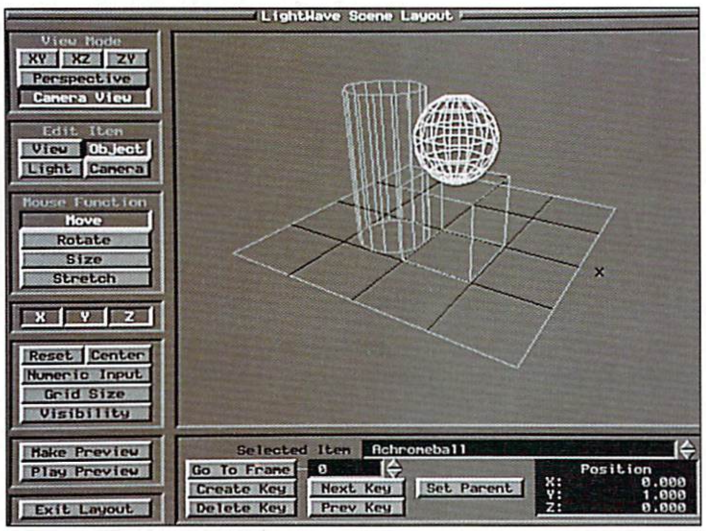


Figure 3. LightWave 3D's Layout screen.

The software's modeler component, LightWave Modeler, is also one of these auxiliary programs. It is professional-looking and provides all the standard modeler features, such as extrude and lathe, but it also offers some unusual ones. These include layers, which enables you to see objects for reference, but not to modify them; fit, which automatically resizes the zoom and pan of the orthographic windows to snugly fit the object in the database (a real time-saver); and a constantly oscillating preview window, which makes even impossible tangles of lines understandable, if a bit hypnotizing.

LightWave's renderer is not a ray-tracer, but it is an excellent alternative. It provides—or fakes—most of the specialties of ray tracing, such as shadows and reflections (but not refraction). You can exercise a fair amount of control over the renderer, although it renders to nothing but the Toaster and it supports no Amiga-viewable modes.

To make an animation viewable on an Amiga, you would have to save your images as separate RGB files (which are huge); next, using a program such as The Art Department (ASDG), you would need to convert each one down to HAM and then compress them into an animation. LightWave can give you a line-drawing preview animation, but, once again, it won't save it. You would have to use a screen-grabber utility to grab each frame of the preview animation and then assemble them all with a utility such as MakeAnim.

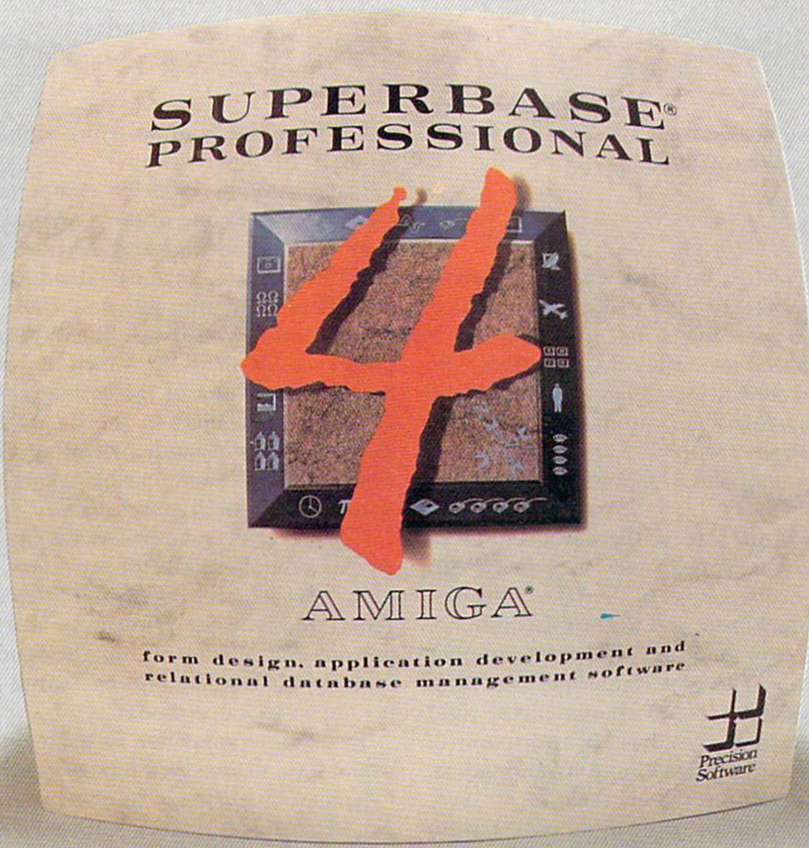
A major disadvantage to LightWave is that in order to run the program, you must enter it through the Video Toaster's "switcher" program, which will not run unless you have a Toaster (making the Toaster, in a way, the world's largest dongle). Apart from that, the start-up time for the switcher is about a minute and a half, so any crashes that might occur become extremely unwelcome. Fortunately, crashes were few and far between, and usually avoidable, but do make sure you have plenty of memory and do not try to use any image you have not yet loaded.

If it were not for its dependence on the Toaster and its lack of a true ray-tracing option, I would call this program a clear winner in just about all categories.

Animation:Journeyman

This program is so different, it almost requires a class in computer-graphics theory just to talk about it. Journeyman tries to address some of the most common problems in digital graphics with some very unusual solutions. Here is some quick (and oversimplified) background information to help you understand this odd program.

All polygon-based modelers have the same built-in problem: curves. To create a curved edge or surface, you must guess how close the camera will be during rendering. If you guess wrong in one direc- ►



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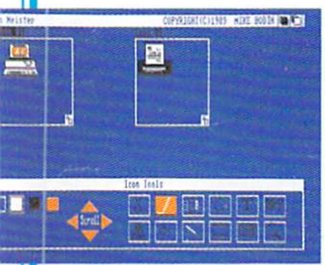
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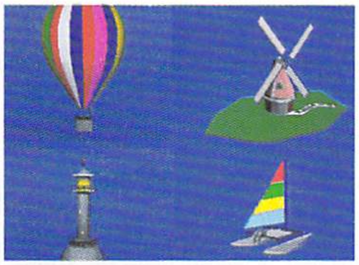
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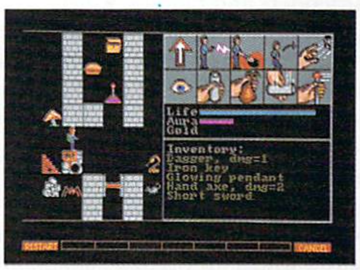
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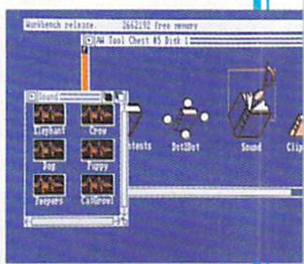
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tion, you will be stuck with rendering countless unneeded facets; if you miss in the other, you will not have enough facets for proper rendering—and all the Phong shading in the world won't help you compensate. The problem lies in the fact that a faceted surface can only approximate a curved one. If these curves are represented by mathematical equations instead of facets, however, you can put your camera anywhere and be assured that your curves will render perfectly.

High-end software in professional systems, such as Wavefront, usually provides the capability for creating and modifying (but not directly rendering) "surface patches," which are just such equations. Once you get used to it, modeling with surface patches is a great way to quickly create complex curved shapes, such as car fenders and saddles, which defy ordinary modeling techniques. If your complex surfaces are part of a character, then your control points can be used to bend the surfaces like rubber during the course of an animation. This is nearly impossible to do in a polygon-based animation system.

"Spline-patching," then, is the design philosophy behind Animation:Journeyman. In addition to patch-based modeling, Journeyman also uses spline-based choreography, which means that all motions are represented not only by their start and end points, but also by a smoothed spline that passes through however many control points you desire. In fact, just about everything in Journeyman is controlled this way, even down to the color of the lamps.

You can even control the "ease" of an object: You can speed up, slow down, or even momentarily reverse the motion of the object as it travels its path, without modifying the path itself! Journeyman also sports image-mapping, built-in textures, and much more, and all features are accessed through a user interface second only to LightWave in beauty and function.

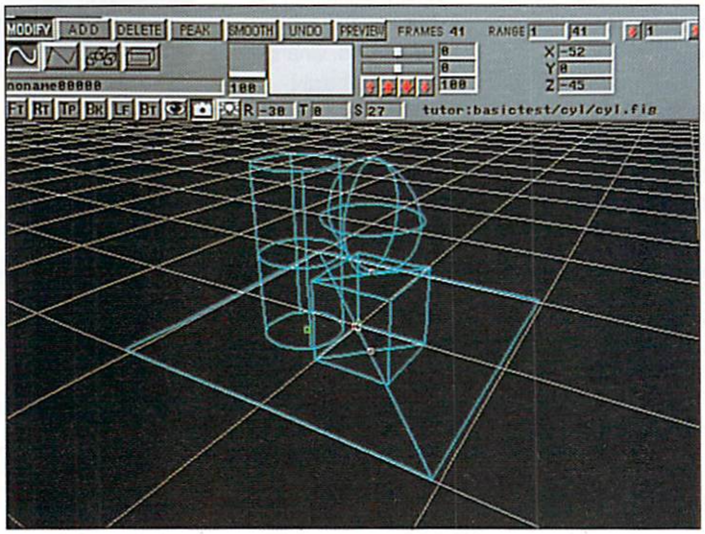


Figure 4. Animation:Journeyman's Director module.

Don't expect, however, to just walk right in and use this program without putting in a lot of learning time. Any program this ambitious is necessarily obtuse, and even Journeyman terminology can be a bit frightening at first. To paraphrase from the manual:

A "Vignette" is the completed rendering of a "Choreography," which is composed of one or more "Characters," which are hierarchical constructions of "Figures," which are hierarchical constructions of "Segments," which are composed of "Splines," which are constructed from "Curves," which are defined by "Control Points." In addition, a "Figure" can have a "Script" assigned to it, which is a series of "Actions" (the generic "Skeleton" motion of any "Figure" in a "Class") or "Morphs," which are a combination of "Muscles" and "Spines" (not "Splines")...

And if that's not enough, you must save each of these types of things, usually in its own directory, by typing in a lengthy pathname. A simple animation in the tutorial ends up existing in more than a dozen files and in about as many subdirectories—some of which are five-deep! If you forget exactly which type of object is which, you can crash the program by trying to load the wrong one. On the plus side, all object and choreography files are saved as ASCII files, so the more analytical animators can decipher them and perhaps write their own programs to create or modify them.

This program is quite obviously a labor of love, and at first glance, it would seem almost to be set up primarily for its creator's own use. But although you can count on a lot of initial head-scratching, this might be just the program for you if you do want to experiment with some state-of-the-art techniques.

If it were possible, with scissors and paste, to construct my own 3-D program from these four packages, I would start with the LightWave layout and interface, splice in the surface patches from Journeyman, and then add the texture- and image-mapping from Imagine. I would also stick in Journeyman's motion-spline graphs and then glue that to the renderer from 3D Professional. I would have the whole thing run via script mode, as in 3D Pro, and finally, I would add portions of Walt Disney's brain to help me come up with ideas. ■

Eric Daniels has been in traditional animation for 13 years. He has worked on many feature films, including Lord of the Rings, The Secret of NIMH, An American Tail, The Rescuers Down Under, *and* Who Framed Roger Rabbit? *He also worked on the original arcade games Dragon's Lair and Space Ace and did all the animation for the Roger Rabbit Amiga game. He was Director of Animation on a portion of Hanna-Barbera's recent projects at Universal Studios, Florida, and is currently working in Hollywood at Baer Animation. Write to him c/o* AmigaWorld, *80 Elm St., Peterborough, NH 03458.*

Way Over the Rainbow. . .

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New 24-bit imaging devices now offer Amiga graphics an astonishing 16.7 million colors!

By Mitch Wells

Until recently, if your video-production house wanted to create graphics with more colors than the Amiga's native 4096, you had to either rent time on a dedicated high-end animation system or buy one. Those days are over. With the advent of software that can create up to 16.7 million colors and hardware that handles it properly, the Amiga finally fulfills its destiny as the high-end graphics workstation it was always touted to be. A number of 24-bit and "near 24-bit" imaging devices have arrived on the market recently. Because their prices and functions differ so markedly, let's take a look at these various boards and boxes, with an eye toward the effects of these differences. *(For details on how to contact the developers of products discussed in this article, see the "Manufacturers' Addresses" list on p. 108.)*



THE FIRST FRAME

Mimetics' **FrameBuffer** ($549.95), the first 24-bit board available for the Amiga, occupies a standard 100-pin A2000 slot. It uses professional BNC connectors for composite video in and out. Sculpt-Animate 4D (Centaur Software), 3D Professional (Progressive Peripherals & Software), Mega Paint (Pseudo Vision), and Caligari Broadcast all provide FrameBuffer support. The board itself comes with software that not only captures a video frame and saves it to IFF or 24-bit RGB, but also converts IFF pictures (including HAM) to its own 24-bit format for display (don't expect more colors than you started with, though).

Unfortunately, FrameBuffer's video output quality is the worst of all the boards I tested. The colors are weak, the board gives off RF "ghosts" that record onto tape, and video capture is tediously slow.

THE NEXT SEQUENCE

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the Amiga lets you attain or approach the standard of output quality established by Truevision's Targa boards for IBM PCs—but at a lesser cost. (See the sidebar below for more on Targas.) This generation includes Impulse's **Firecracker 24** ($1600), which, like the FrameBuffer, is a 24-bit video card that occupies a standard A2000 slot. While the FrameBuffer provides composite video in/out only, however, Firecracker offers an RGB output with an RGB-through port, so the Amiga's own display is overlaid on top of the Firecracker's output, and both are displayed on an Amiga monitor. The Firecracker's output is the best of all the Amiga devices—certainly on a par with the Targa boards. Be warned, though: If you want to record the Firecracker's output to tape, you will need an RGB/NTSC composite encoder/decoder. Also, there is no mention of frame grabbing in the Firecracker manual, and there is currently no software support for that function.

Firecracker's software, as with FrameBuffer's, is spartan at best. It allows you to turn the board off and on and to convert RGBN (Impulse's own 24-bit format) and IFF (including 24-bit IFF) files for display on the Firecracker. Impulse claims that a 24-bit paint program is forthcoming, but no release date has been mentioned.

NewTek's **Video Toaster** ($1599) is an all-in-one production switcher, digital video-effects (DVE) generator, frame grabber, and character generator. It also provides twin frame buffers that allow you to hold and alternately display two complete 24-bit images. The Toaster has NTSC composite inputs and outputs that also support S-Video, and it installs in the A2000's video slot. The Toaster allows for real-time painting of true 24-bit images, but they are visible only in 12-bit format. Still, the Toaster's output is vibrant, and being able to use its DVEs with two 24-bit images makes animating fun!

The Toaster comes with some fine software. The 2-D graphics program, ToasterPaint, allows you to paint an oversized HAM image on the Amiga screen and then send it out to the Toaster for display. This makes for a workable solution to the real-time 24-bit painting limitation. The Toaster also comes with a fine 3-D rendering and animation program, LightWave 3D. If you can convert image files to IFF 24, the Toaster will display them, but only two at a time, precluding automated frame recording to videotape with all programs but LightWave.

On the other end of the price spectrum are **HAM-E** ($299, Black Belt Systems) and **DCTV** ($495, Digital Creations). Both are impressive units, especially considering their prices. Because these are external boxes that connect between the Amiga's RGB port and the monitor, you can use them with any Amiga model.

HAM-E is not a 16- or 24-bit frame buffer. It displays either 262,000+ colors at once, or 256 colors from a palette of 16 million with real-time painting. Still, it can display most 24-bit files adequately. Rather than overlaying the Amiga's output on its own, as does Firecracker, HAM-E combines the two to produce its unique output. As with Firecracker, you need an RGB/NTSC or PAL composite encoder/decoder to output HAM-E pictures to videotape.

On a per-dollar basis, the HAM-E software is equally as impressive as the hardware. Not only does it include conversion utilities to display IFF 24 files and 45 other formats, but it also comes with a real- ►

Targa—the Standard

TRUEVISION'S **TARGA** boards for IBMs and Bridgeboard-equipped Amiga 2000s are the *de facto* standard against which other low-end frame buffers are usually judged. That's probably because Targa arrived on the market first.

Each board in the new Targa+ series, which includes 16-, 24-, and 32-bit versions, comes with an RGB-to-NTSC encoder/decoder, RGB input/output, and Y-C input/output for SVHS, Hi-Band 8mm, and Umatic SP tape formats. (For a look at the differences between numbers of bits, see the sidebar "Real Color.") Simply plug in a camera, and the board can capture a video frame. Also, Targa+ comes with a demo version of Truevision's TIPS paint software, which, in combination with the other features, makes it the best equipped of all the boards I looked at. Targa+ is also the most expensive; the 16-bit board is priced at $1795, excluding the cost of the Commodore AT ($699.95) or XT ($1495) Bridgeboard required to run it.

Fortunately, there is an abundance of Amiga software that supports Targa boards. Caligari Broadcast (Octree Software) outputs directly to Targa (via the Bridgeboard). ImageLink 2.0 (Active Circuits) can convert most Amiga file formats, 24-bit or otherwise, to the Targa format and then send the file to the board. The Art Department (ASDG) supports Targa via a separate loader module. Finally, Truevision's own TIPS software runs (albeit a bit slowly) on a 512K XT Bridgeboard. As for video-output quality, Targa-series boards are among the best available, tied for first place with the Firecracker 24. □

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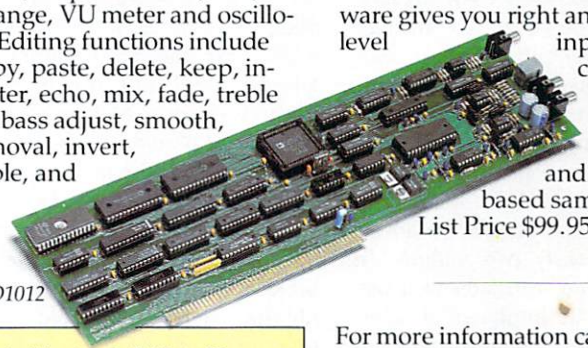
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time paint program that, among other things, offers color cycling (which makes HAM-E the only board of the bunch to offer that feature). The documentation provides plenty of hints and tips for writing C and ARexx scripts for use with HAM-E.

HAM-E's video output is noticeably weaker than that of the Firecracker or Targa boards, but is far superior to the FrameBuffer's, and, for the price, is more than adequate.

Both DCTV and HAM-E offer real-time animation (using conventional Amiga frame-compression techniques) in addition to real-time painting. HAM-E also provides advanced animation commands for linear, circular and orbital paths. Both can save their images in an IFF-compatible format for use with such animation programs as DeluxePaint III (Electronic Arts) and Animation Station (Progressive Peripherals). They save images as high-resolution IFF pictures, with information unique to either HAM-E or DCTV in the upper-left corner of the image. Any Amiga animation program can make animations from these files as long as it does not change the picture size when compressing. Finally, although it costs $100 more than HAM-E, DCTV's price value is just as impressive. This is where the products' similarities end, however.

DCTV allows you to paint or animate in a full 24-bit (16.7 million) color scheme. Its paint program has ►

Real Color

IF YOU TRY to sell a Fortune 500 company on your video studio by saying "My Amiga offers 32 colors," you might as well not bother. HAM mode's 4096 colors are much closer to what professionals expect, but HAM is hampered by color artifacting (using three pixels as a transition between two colors) and a lack of resolution (352 × 480 in overscan). What your potential client wants is "real" color.

To computer animators, a *real* color device is one that can produce close to as many colors as NTSC (National Television Standards Committee) broadcast video can use—nearly two million. In technical terms, that translates to a picture with at least 21 bitplanes of color, although 16 bits with dithering are adequate for nonbroadcast applications. "Bits of color" refers to how many colors a single pixel within an image can be.

Because bits are simply on/off switches, one bitplane results in two colors, perhaps black and white. Two bitplanes translates to four colors, three to eight colors, four to 16 colors, and so on. Five bitplanes (32 colors) are all the Amiga can handle (except in HAM and Extra_Halfbrite modes, which are software and hardware modifications of four and five bitplanes). While 16- and 24-bit devices provide over 32,000 and 16.7 million colors respectively, eight-bitplane devices usually produce 256 shades of gray (helpful in desktop publishing and analytical work), rather than 256 colors.

Unlike standard Amiga graphics, 24-bit graphics share no one common format. The most widely used in the Amiga community is Sculpt-Animate 4D's 24-bit SculptRGB format. Developed by Mimetics for the FrameBuffer and first adopted by Sculpt, this format consists of three separate files, one each for red, green, and blue data. The next most frequently used is the new SuperIFF 24-bit format, developed by ASDG for its ScanLab hardware/software combination. Third in standard usage is NewTek's 21-bit RAW format, which consists of a single file that has 21 bits of color information (over two million colors) and is closest to NTSC video in number of colors. Rounding out the list of formats are Impulse's 12- and 24-bit RGBN, TARGA, and Caligari's .6rn files.

Devices that employ extra bitplanes are most commonly frame buffers and frame-capture units. Frame buffers can display a single frame for video, graphics, or animation in a great number of colors. A frame-capture device, or frame grabber, is simply a digitizer that can hold in its memory a complete frame of color or black-and-white video. For example, NewTek's Digi-View Gold cannot capture or hold a complete frame of video at one time.

You can output to these devices with paint and rendering programs. A paint program (such as DeluxePaint III or Truevision's TIPS) lets you manipulate the colors on the screen in real time by using a keyboard, mouse, or drawing tablet. A rendering program (such as Sculpt-Animate 4D) does not allow real-time manipulation of colors like a brush on a canvas, but rather works with objects. The artist designs objects, places them in two- or three-dimensional space, perhaps sets up lighting schemes, and then instructs the program to color the objects and give them textures.

Unlike the Amiga, a frame buffer is capable of displaying only one frame of video. To animate frame-buffer images, you need a single-frame controller in order to link the frame-buffer-equipped Amiga and a capable videotape recorder (VTR) or film recorder. The controller triggers a VTR to record the video frame displayed on the frame buffer onto a single frame of videotape, and then prepares for the next frame.

With the help of Photon Video Transport Controller (MicroIllusions), programs such as Sculpt-Animate 4D, Caligari Broadcast, ImageLink, and 3D Professional can all send an image to the frame buffer and then trigger the VTR automatically. □

—MW



fewer features than the most recent versions of HAM-E's, but is perhaps easier to learn because it is more like other Amiga paint programs. DCTV's resolution is a full 736×480, while HAM-E's is about the same as overscanned HAM (348×480). Also, DCTV lets you digitize a single, full-color frame of still video from a camera or still source in about ten seconds.

DCTV has no RGB outputs (although the manual alludes to a future RGB converter). Instead, it offers NTSC line video (with an RCA jack), with no provision for S-video formats. DCTV's line-video output is clean, colorful, and certainly comparable to that of the Video Toaster.

DCTV is probably not the last of the new hardware wave. Still on the horizon is M.A.S.T.'s Colorburst, a unit promising 24-bit display, support for real-time painting, and image conversion to its own display format. Also yet to come are a 24-bit frame buffer from GVP and a 32-bit unit from Amiga Centre Scotland.

The Finished Picture

For the aspiring professional with plenty of money, I heartily recommend a full-blown, 24-bit animation system consisting of an Amiga 2500 with the A2086 Bridgeboard, a Targa+ 16/32 card ($1995), Truevision's TIPS 32 software, Caligari Broadcast, and Sculpt-Animate 4D. If the Targa setup is out of range, I suggest the Video Toaster and its own LightWave software, or the Firecracker 24 with either Sculpt-Animate 4D or Imagine (Impulse). When you add in a single-frame controller and a capable video recorder, 24-bit animation is still a big investment, but the professional, near-broadcast results are worth it.

If you own a frame buffer of any sort, you should also own ImageLink. Both a conversion and a control program, Imagelink converts among picture formats, mainly from one 24-bit type to another or from 24-bit to Amiga-displayable IFF. It also links software and hardware (such as Sculpt-Animate and a Targa board), thus making almost any system more useful. ■

Mitch Wells is president of AFR International, a video-graphics production company. Write to him c/o AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458.*

AMIGA PROFILE

Behind the Portrait

THOSE WHO WATCH rock videos on TV or pay attention to the cover of *AmigaWorld* should now be familiar with Todd Rundgren. Those who really know the exploits of this music star (whose many hits include "Can We Still Be Friends" and "Real Man") probably also know that he is a tried and true fan of Apple's Macintosh. He even has a company, Utopia Grokware, that develops Macintosh software.

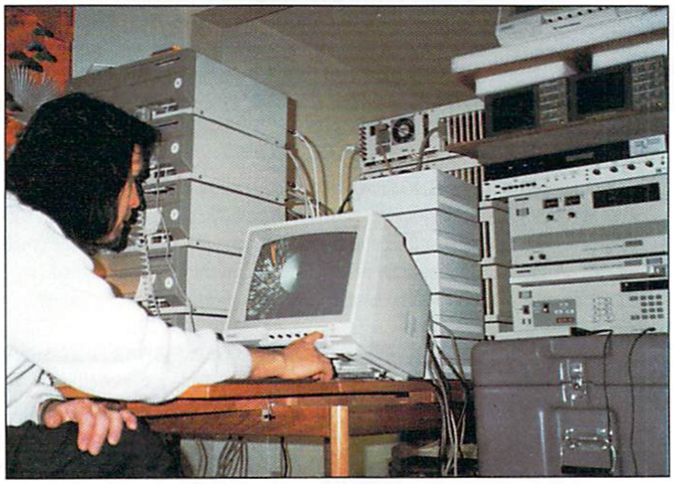
Fortunately for us, the Macintosh does not run NewTek's Video Toaster or its LightWave 3D software. And this rockin' combination was just the ticket for Rundgren's latest video, for his song "Change Myself."

Rundgren first glimpsed the Toaster at Siggraph, and not long after had ten of these gems installed in two five-high stacks of A2500s. He added another ten 300MB hard drives, and dug right into heavy 3-D rendering.

According to Lisa Osta, an author for the fan newsletter *Utopia Times*, who visited Todd's studio, Rundgren created 7200 frames, equal to some ten gigabytes of information, all of which was output to write-only optical disks.

Most musicians simply write or play the songs, and let experts handle the video side. Not Rundgren. He worked for months, painstakingly creating and rendering these complex animations. He also worked as he learned the system, and even received special software upgrades on demand from LightWave author Alan Hastings.

The result is a mind-boggling video that you'd swear took millions to produce. Instead, the investment was a mere $65,000 in computer equipment that can be used again and again.



Rocker Rundgren (sporting a Mac sweater) eyeballs one of the 7200 LightWave frames he created.

Although Rundgren is clearly enthralled with the Toaster, our sources report that he still has a solid allegiance to the Mac, believing that the Amiga architecture still has some serious quirks. But hey, at least we're halfway there.

—***Doug Barney***

PHOTO BY LISA OSTA



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Commodore 1950

TOWER of Power!

Power users should find the "Tower" version of the Amiga 3000 a dream machine for its sheer expandability in almost any direction imaginable.

By Lou Wallace

TWELVE MONTHS AGO we gave you a "published-on-the-day-of-its-announcement" exclusive story on Commodore's next-generation line of Amiga computers: the Amiga 3000 (Jun. '90, p. 18). We told you then that the company planned to use this new platform as the launching pad for new developments in Amiga technology. And we said to stay tuned for sequels in the not-too-distant future.

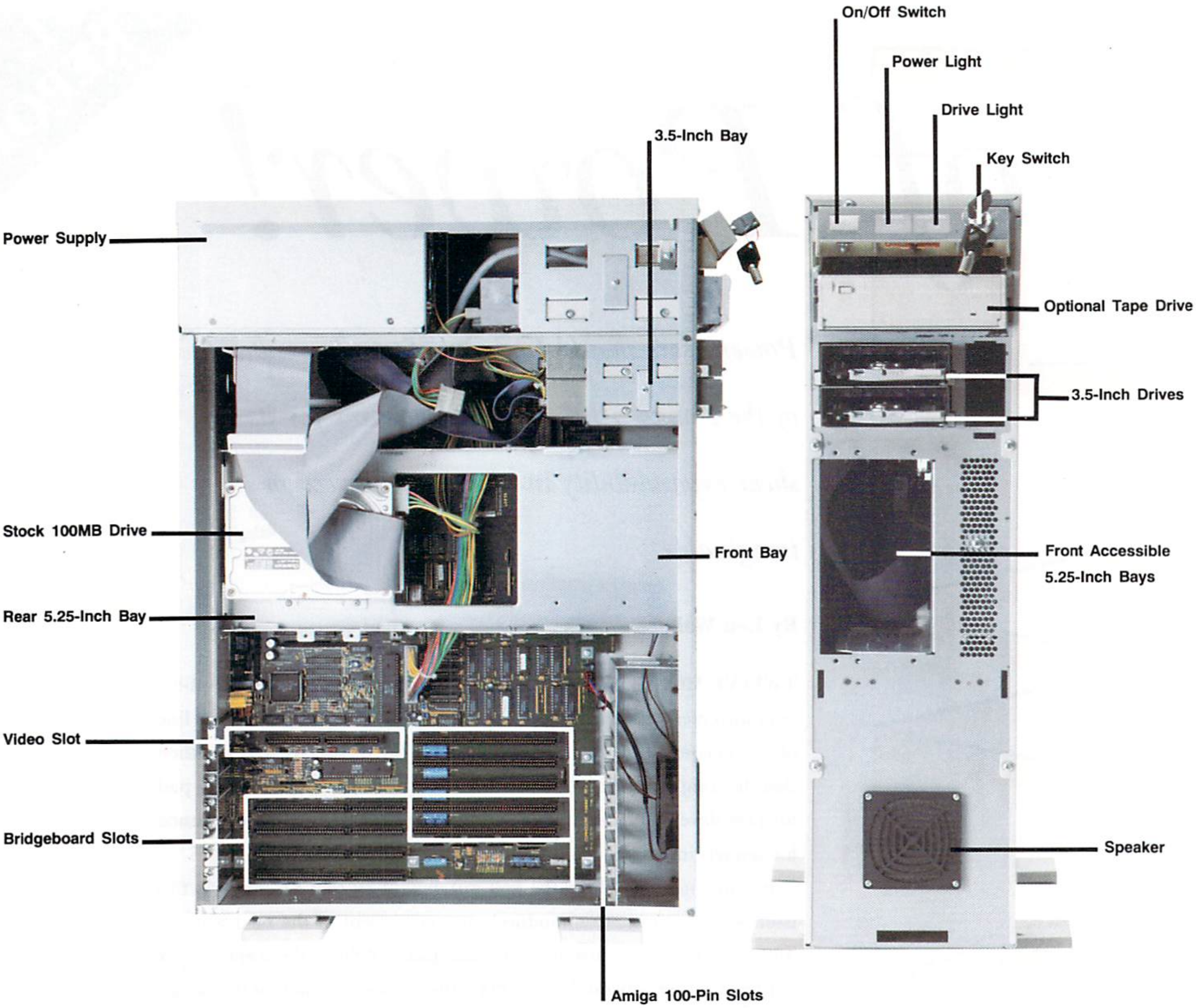
It's time now to deliver the first installment on that promise. As this issue went to press, Commodore's announcement of the next wave of A3000 technology is just about to take place. Behind the scenes, work has been under way on the A3000T—the "Tower" version of the Amiga 3000—for a number of months. *AmigaWorld* has been working with a Tower for several weeks now so that we could provide you with some hands-on impressions of the new system as soon as the official announcement became public. So join us now for this *AW* Special Report. *(Editor's note: As this issue was going to press, Commodore had not set the A3000T's price. We will include it in the June issue.)*

THE A3000: GENEROUS. . .BUT NOT EASILY EXPANDABLE

One of the things that amazed students of the Amiga 3000 upon first glance was that it crammed all of its high-power features into a streamlined, small-footprint case. The A3000 motherboard packs a 25 MHz

Continued on p. 46.

PHOTOGRAPHED BY ED JUDICE



A3000T Specifications

- Motorola 25 MHz 68030 CPU.
- Motorola 25 MHz 68882 math coprocessor.
- Video Display Enhancer.
- DMA SCSI disk controller.
- 280-watt power supply.
- 4MB of 32-bit RAM (expandable to 16MB on motherboard).
- 1MB chip RAM (expandable to 2MB on motherboard).
- 100MB hard drive.
- One 3.5-inch 880K floppy drive.
- Space for additional externally accessible hard drives or devices:
  - one 3.5-inch drive.
  - one 5.25-inch half-height, mounted horizontally.
  - two 5.25-inch half-height, mounted vertically.
- Space for internally accessible devices:
  - up to two full-height devices, or
  - up to four half-height devices.
- Expansion slots:
  - fast slot for 68040 accelerator.
  - video slot for internal video devices.
  - five Zorro III slots.
  - four Bridgeboard PC slots.

From p. 43.

68030 processor, a 68882 math coprocessor, a full 32-bit bus, the new enhanced chip set (ECS), and enough RAM-chip sockets to hold an impressive 18 megabytes of system memory. In addition, it provides a built-in SCSI DMA hard-disk controller, a display enhancer that cuts down interlace flicker, and 40–100MB (depending on configuration) of hard-disk storage capacity.

Opening up the A3000T is like walking into the lobby of a Vegas casino.

While such a compact little dynamo packs an enormous wallop as far as some users are concerned, the small-form advantage of the A3000 may indeed prove a liability for other, more power-oriented Amiga users. In order to keep the box small, CBM engineers reduced the number of available slots (in comparison with the A2000), limiting the total to four expansion slots, one video slot, and one CPU slot.

As a further hindrance to expandability, the video slot is in-line with one of the 100-pin expansion slots, and another expansion slot is dedicated to Bridgeboard applications. While there is obviously a great deal you can do with an A3000, there is still a real limit to the number of internal cards you can use effectively with the current system.

In addition, the A3000 comes with room for only three 3.5-inch drives, so there is no place to put 5.25-inch PC drives for the Bridgeboard, much less to install large-capacity 5.25-inch fixed drives or streaming-tape drives. Users simply must add all such peripherals to the A3000 *externally*—which seems to defeat the purpose of a high-end system designed for power use.

Up, Up, and Away!

Like Manhattan property owners, Commodore engineers have long held a solution to A3000 expansion: vertical development. The A3000T is a full-height "Tower" version of the Amiga 3000. (For those unfamiliar with the term, a Tower is a large computer case that appears to be set on its end; you normally place it on the floor, not on your desk.) Inside, you will find ample room for all the expansion devices you will probably ever need, along with a 280-watt power supply built to handle them.

For openers, the A3000T supports a wide variety of drive bays. Two 3.5-inch bays located in the front allow for two floppy drives or one floppy and one 3.5-inch hard drive. Above these is a horizontal 5.25-inch half-height bay where you can install any half-height SCSI device. (In our system, this bay is occupied by a streaming-tape drive.) Just below the 3.5-inch bays, you will find a pair of bays for two vertically mounted, half-height 5.25-inch devices, although you can adapt this space to mount one full-height 5.25-inch drive.

Inside, behind these drives, there is space for two more 5.25-inch half-height drives or another full-height drive. All in all, this means that it is possible to install in the A3000T up to seven devices, all mounted internally. If that won't do, you can always use one of the expansion slots to add a hardcard!

Speaking of slots, opening up the A3000T is like walking into the lobby of a Vegas casino. The system provides the standard CPU and video slots found in the A3000, as well as five Zorro III slots and four Bridgeboard slots. Not all are available, however, for every expansion strategy. For instance, the video slot is in-line with the first Zorro III slot, while two of the PC slots are in-line with other Zorro III slots. This means that if you are using all four PC Bridgeboard slots, you will have only three Amiga slots available. That may, of course, be an unlikely scenario, but even if you use three PC slots, that still leaves four Amiga slots; if you don't use any Bridgeboard slots, that leaves all five Amiga slots open, with two PC slots untouched. The expansion possibilities, as you can see, are hardly limited.

Tower Teasers

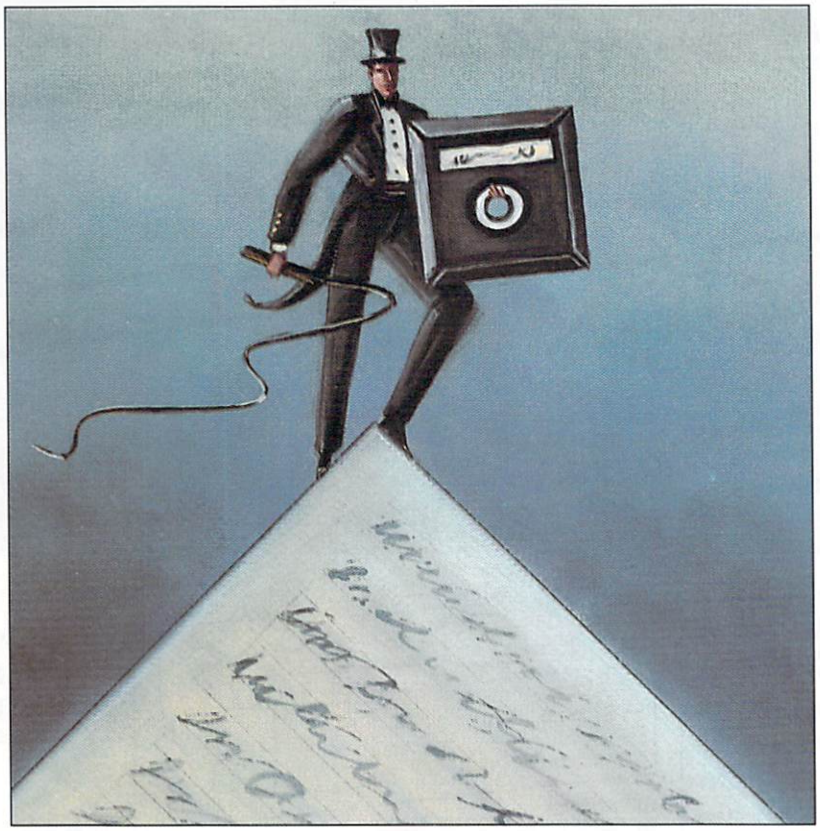
While expansion slots and bays are the major attraction, the A3000T sports a few other features worthy of note. It includes its own built-in speaker, which will handle most ordinary sound requirements (although you will probably want to add stereo speakers if you are building the kind of power system the Tower was designed for). In addition, the A3000T provides a new high-resolution two-button mouse—a welcome departure from the original Amiga mouse. To help make the long journey from the floor to your desktop, Commodore supplies an extra-long mouse cable. (The manufacturer also provides an extender cable that allows the standard monitor cable to reach the Tower case.)

On the outside of the case, you find power and hard-disk lights, an on/off switch, and a key switch. With the latter, you can lock the mouse and keyboard to prevent unauthorized users from accessing them in your absence. Also, turning this switch all the way to the right will perform a warm reset of the machine.

In summary, the A3000T is a power user's delight. It contains all the new features of the A3000, plus more room for expansion than the A2000 and A3000 combined. Already I'm planning what to put in mine. Let's see now. . .a 68040 card here, a CD-ROM there, a tape drive, a 700-meg full-height drive, maybe even a Firecracker 24 graphics card in this slot and a 32-meg memory board in another, and. . .what *will* I put in all those other spots? ■

Tame the Data Beast!

Instead of working around them, make your records work for you with these Superbase relational database techniques.



DO THE WORDS "relational database management" conjure up visions of Gunther Gebel-Williams with an MIS degree whipping back lion-sized manuals that roar such dataspeak as "structured queries," "indexed field links," and "validation formulas?" They needn't. With Superbase Professional's ($349.95) Query and Validation requesters as your whips, you too can tame the relational beast and make data jump to your commands. [Note: Most, if not all, of these concepts will work with Superbase Personal 2, ($149.95) as well.]

Fear still gnawing at you? Let's examine why you should step in the cage at all. Although you can solve simple information-management problems via a "flat-file" (single-file) approach, this method is very inefficient and quite limiting for more robust problems.

The classic metaphor for the flat-file approach is a file of index cards in which you record each unique piece of data on a separate card. For example, the company's index-file box for product information would have a single card devoted to each product, containing such details as production costs, sales price, and so on. A computerized version of this database speeds your access to individual product records and lets you sort products by type or cost. Flat files fall short on such complicated questions as, "How many Twigglets did we sell in September 1990?" or "How much income did the company generate selling Zingbolts in 1990?" While the example product database does contain the company's profit on one Zingbolt, to answer the questions, you need data on overall product sales, which would be stored in an orders database. ►

By Loren Lovhaug

ILLUSTRATED BY KAREN STOLPER

The dilemma points out the significance of relational database management, the techniques of which let you access information stored in a second file based on the data in the original file. To do this, you must establish a common link between the files in question, such as one or more fields that contain the same data in both files.

As an illustration, consider a company that makes snacks and fasteners. Figure 1 shows example fields from that company's products and orders database files. Here, the Item field serves as the link between the files. Now let's take advantage of it to answer the burning question, "How much income did the company generate from its snack division and its fastener division in 1990?"

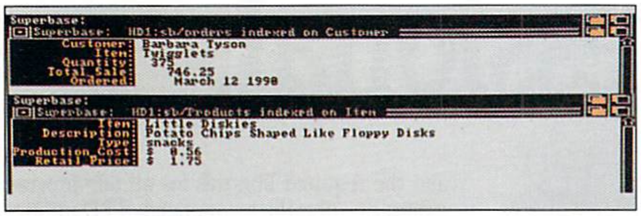


Figure 1. The Item field links records in these two databases.

GET CRACKING

Before Superbase can provide an answer, you must formulate the question in terms it can understand. To do so, use the Query Definition requester (see Figure 2), which you access from the Process menu's Edit Query option. Pose your question in the requester's four text gadgets: Fields, Report, Filter, and Order. You can supply information to these text gadgets by typing them in or by clicking on the gadget name and then selecting the appropriate choices in the resulting requesters (see Figure 3).

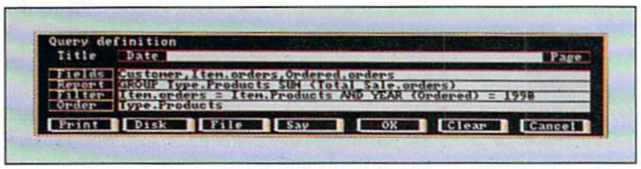


Figure 2. The Query Definition requester tells Superbase what to display and how to format it.

Fields tells Superbase which fields you wish to display as part of the answer and how they should look. For example, you can supply Superbase with the specific position (using the @ symbol) at which to display the information, or you can limit the number of displayed characters in a specific field (using the & symbol).

Report tells Superbase how you would like your question answered. For example, should the answer be expressed in terms of the sum of specific fields or a count of how many fields match a specific criteria?

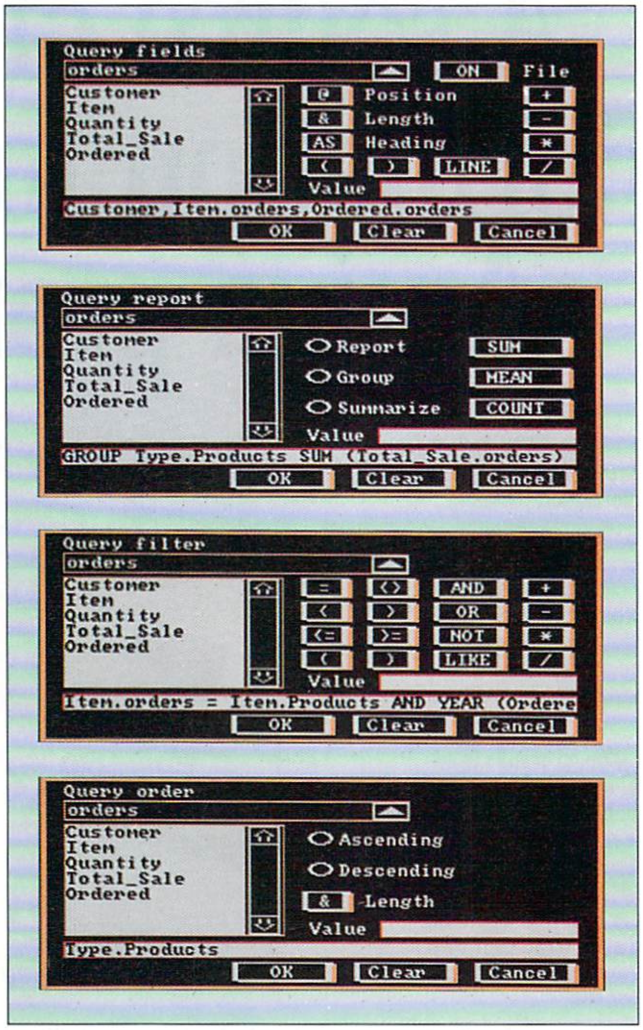


Figure 3. Point and click your commands in the Query Definition subrequesters.

Filter, the most important setting, dictates the criteria and the relational link(s) Superbase will use to determine whether it should consider or ignore each record. Here, you define the parameters for the question's answer. For example, you can tell Superbase to calculate the answer based only on a subset of the database, such as those products that sold more than 10,000 units, or sales in the cities of Houston and Minneapolis.

Finally, Order specifies the order in which records are presented. For instance, you could display information sorted by date or by city. You can also specify multiple-sort criteria, as well as ascending or descending order.

In the Query Definition requester in Figure 2, the Fields gadget asks Superbase to display the Customer, Item, and Ordered fields for records that meet the criteria specified in the Filter gadget. The .orders ►

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extension tells Superbase to look in the orders database. Report directs the program to display the sum of the "Total_Sale" field in the orders file (SUM (Total Sales.orders)) and to group them as snacks or fasteners according to the Type field in the products database (GROUP Type.Products).

Most importantly, Filter tells Superbase that the common link between the orders and products files is the Item field in each (Item.orders=Item. Products), and that the program should consider only records with the year 1990 in the Ordered field (YEAR(Ordered)=1990). Finally, Orders instructs Superbase to display the records sorted by the Type field in the Products database. To pose the query, click on Okay. Figure 4 shows the results.

Although, for brevity's sake, this query worked on only a little over two dozen records, it could work on similar products and orders files of thousands of records each. Generating a useful query for your own data may take practice, but the example is a good pattern to study. (Consult the "Using Query" section

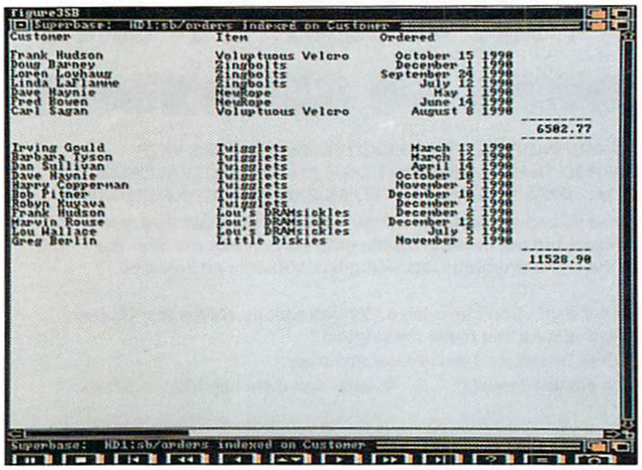


Figure 4. Superbase displays the results of Figure 2's query.

of the Superbase manual for a complete list of command options.) Now that you have cowed "structured queries" and "indexed field links" into submission, you are ready to take on "validation formulas."

Limited Entry Area

When a customer places an order with our company over the telephone, the operator usually types in the customer's name and order information manually. Relational techniques and Superbase's ability to perform calculations on fields during data entry, however, can speed up the process by taking advantage of the information in the products database.

Validation formulas let you limit the kind of data entered into a particular field. For the Item field in the orders database, we want a formula that limits entries to those products the company sells (the items in the products database). In addition, we want Superbase to automatically suggest the proper product name if the operator makes a typing error.

To set up a validation formula, you must click the Validated attribute in the File Definition requester when you first set up your database (see Figure 5). (You can edit an existing field's definition to make it validated, but be careful when using attributes in combination: the External, Required, Read Only, Calculation, and Constant attributes affect Validated's

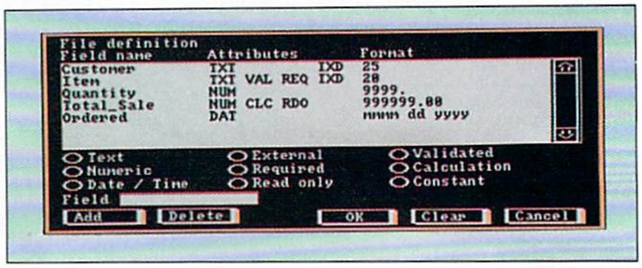


Figure 5. The File Definition requester lets you assign field attributes.

performance.) Clicking on Validated's button brings up the Validation Formula requester for the current field (see Figure 6).

To accomplish our task, Superbase must first check data entered in the Item field of the orders file against the contents of the Item field in the products file. Superbase's LOOKUP command attempts to "look up" an indexed field's contents within a set of specified records. In effect, it asks and answers such questions as, "Does the item in field 1 of file A exist in field 3 of file B?" In the same command, you can specify the manner in which Superbase proceeds upon receiving a positive or negative answer. The LOOKUP command serves as the method for defining the common link between database files, just as did the filter option of the Query facility in the previous example.

For the example problem, LOOKUP's syntax is:

```
LOOKUP(item.orders,item.product)
```

This statement will suffice, assuming LOOKUP always finds a match. Rather than being overly optimistic, you should make a provision for handling mistyped ►

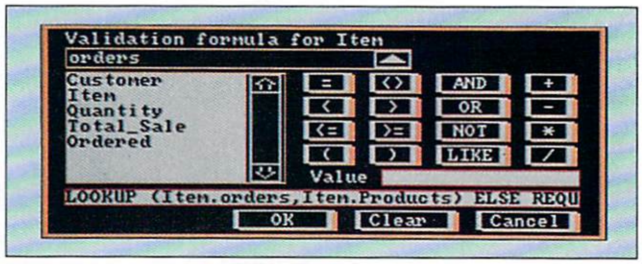


Figure 6. With the LOOKUP command, you can confirm that the user is entering correct data.

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MFLOPS	3.5+	Less than 1	Less than 1	1.
Cache Sizes	4Kbytes x 2	256bytes x 2	256bytes x 2	8Kbytes
Burst	Yes	No	Yes	Yes

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product names. LOOKUP's ELSE clause does the trick.

If LOOKUP fails to find a match, the best course is for Superbase to display an Intuition-style requester (complete with scroll gadgets), so that the operator can select an item that does exist in the products file. The REQUEST function lets you call up and use Superbase's built-in requesters. Because the REQUEST function is thoroughly documented in the Superbase supplement book and ReadMe file, I will not repeat the specifics of its syntax. Combining LOOKUP and REQUEST via ELSE gives you the following field-validation formula for the example. (Type it into the text gadget as a single line.)

```
LOOKUP(item.orders,item.products) ELSE
    REQUEST "Select the item with the mouse",
    "in the window below",20,,item.orders,40,item.products
```

The command also has two useful side-effects. If you enter the first few letters of a valid product name, the REQUEST function displays in the Intuition requester window the valid items that start with those letters, making Superbase a quasi spell checker. Even better, if you select Required as well as Validated when defining the Item field's attributes, Superbase will not allow you to enter a null value in the field.

The Intuition requester appears automatically if you press RETURN while in the empty field. Now the operator can simply press RETURN, then select the requested product from the requester. If you were to get ambitious, you could even instruct Superbase to calculate the order price based on the Quantity and Retail_Price fields.

With these two techniques, you are well on your way to conquering Superbase's relational capabilities. Do not let your guard down, however; Superbase has plenty of other functions waiting to pounce, such as relational forms-processing and relational transaction-processing facilities. If you shield yourself with your new understanding of file links, even these will be no match for you. ■

Loren Lovhaug is a frequent contributor to Amiga and C-64/128 publications. He is also a sysop on both Quantum Link and GEnie. Write to him c/o AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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The "Ami 500"

EPILOGUE

The "Ultimate" A500

It's four for the price of three here in the finale of our series on upgrading the A500. Now. . .we build excitement!

By Tim Walsh



The sport of hot-rodding, which so entranced us in our youth, involved buying lots of things to make our jalopies look and sound fast. (If they actually went fast, all the better!) Nowadays, few of us are tempted to lay out cash for the sake of attracting attention from teenagers and law-enforcement officials. As an Amiga owner looking to get more performance from your system, however, you may find that a few traces of high-octane vapors still haunt your spirit.

To satisfy the dragster in all of us, I have assembled the "Ultimate" Amiga 500 hot rod. My goal was to build the fastest and most versatile dream machine possible using an A500 as the cornerstone. Practicality was also a consideration, although not a priority. I sought the most sensible, rather than the most expensive, combination of products. *(For details on how to contact the developers or distributors of products mentioned in this article, consult the "Manufacturers' Addresses" list on p. 108.)*

Hold It There!

A key component that allows A2000- and A3000-compatible cards to work with the low-budget Amiga, **Bodega Bay** ($429, California Access) plays an important role in the making of the Ultimate A500. Thanks to Bodega Bay's mass, the Ultimate A500 is ►

bulkier than the A2000 and fairly dwarfs the A3000. It connects to the computer's expansion bus and gives you four expansion slots, a 200-watt power supply, a much-needed cooling fan, and ample room for hard disks and internal floppy drives.

About the only A2000 products the unit cannot accommodate are those that require either the accelerator or video slot on the A2000 (neither of these is available on the Bodega Bay or any other A500 expander). That rules out the use of A2000 accelerators and components such as NewTek's Video Toaster and MicroWay's flickerFixer.

In true hot-rodder fashion, I wanted to stuff the box with all manner of go-fast components. Chief among these was a hard-disk controller. This was a top priority because a hard drive is essential for any high-performance system, and Bodega Bay precludes the addition of a traditional A500 hard disk.

With Bodega Bay in place, I had my choice of more than a dozen controllers now being made for the A2000. Although others may be faster, I chose Advanced Storage Systems' **Nexus** controller because the company sells an array of mass-storage devices to complement it. As a result, my configuration included Advanced Storage's **HardPack44** Syquest-cartridge drive ($799) for large-capacity removable storage, and the **SideWinder 250** ($749) streaming-tape drive for fast and convenient hard-disk backups.

Both these units fit nicely into Advanced's **Sub-System/SCSI** ($229), an external box that fits beside the monitor on top of the Bodega Bay. The Sub-System houses one full-height or two half-height SCSI devices and provides a pass-through connector so you can hook up yet more devices (maybe even an optical drive, although this, with its $5000 or so price tag, was beyond the bounds of this setup).

The Nexus controller that runs these devices is actually a hardcard with 4MB of RAM ($979). It fits into just one of the four Bodega Bay slots, but because of the 40MB hard disk secured to its side, it wastes two additional slots. With this setup, I could not install any internal device wider than a RAM card in the fourth slot, so I settled on a multiple-serial card. While I have not hooked up any peripherals to the machine via this card, it paves the way for tremendous expandability. With it, I could add a PostScript laser printer and a scanner, plus an external modem—and use them all simultaneously. Incidentally, we learned at press time that Advanced Storage is replacing the board we used with an 8MB RAM-capacity board ($299 without RAM) that hosts a 52MB Quantum disk ($399).

Please note that in choosing to use the Nexus setup, I disregarded California Access' warning against installing hardcards. Because the Bodega Bay's slots are horizontal, as opposed to the vertical configuration found in the A2000, hard disks mounted to controllers are forced to operate upside down. Despite its inverted placement, the Nexus hardcard worked flawlessly. I never lost a byte of data during daily use, in spite of frequent jostling of the computer. If you are going to ignore California Access' advice and install a hardcard in the Bodega Bay, I recommend performing a low-level format with the hard disk in that position before using the drive. Doing so will minimize your chances of disaster down the road.

Outside the Box

Having spent a few months sifting through most of the A500 peripherals available, it was a breeze deciding which ones to add. The first item on my must-have list was CSA's **Mega-Midget Racer** (MMR), which nestles just above the A500's motherboard. The unit I installed, assembled expressly for this project, housed a 33 MHz 68030 chip, a 50 MHz 68882 co-processor, 8MB of 32-bit fast RAM, and 512K of 70-nanosecond static RAM ($3794). This little powerhouse delivers an astounding performance increase.

As with all good things, Mega-Midget Racer has a down side: It precludes the use of some other dandy products. For example, attempting to install ICD's new **Flicker Free Video** ($499.95), which banishes hi-res flicker, was impossible because the display-enhancer board raises the height of the Amiga's Denise chip by a quarter of an inch or so. MMR is also incompatible with Vortex's multitasking **ATOnce** board ($299, distributed by Talon Technologies), which would have given my machine MS-DOS 80286 capabilities. Pulsar's Power PC board ($525), a PC-XT emulator that fits into the expansion slot on the underside of the A500, pinch hit for ATOnce.

Without Flicker Free Video, I had no need for the multisync monitor I had hoped to add, so I stuck with Commodore's latest revision of its 1084 monitor, the **1084S-D1** ($399).

One leftover from my A500's stock configuration was the Commodore **A1011** external floppy drive ($199). I thought the Ultimate A500 needed at least one extra disk drive, and I would have preferred to install two in the Bodega Bay's drive bay. Although California Access advertisements show the Bodega Bay set up in this configuration, the unit is not currently available with the drives inserted, and you cannot purchase them separately for this type of installation.

How Does It Perform?

With any device that claims to be the "ultimate," performance is the biggest consideration. So how does the Ultimate A500 perform?

First of all, this machine is *fast*! I used the FastROM functions of Dave Haynie's public-domain program, SetCPU, to copy Kickstart into the Mega-Midget Racer's 32-bit Fast RAM, letting it operate at 34.09 MHz. This allowed the Ultimate A500 to operate 1.13 times faster than a 25 MHz A3000, and 6.81 times as fast as a stock A500! It performed floating-point calculations at a rate identical to the 25 MHz A3000, and ►

Bodega Bay

California Access

Expansion chassis

Provides four 100-pin slots for A2000-style cards.

Hiding within the Bodega Bay are:

Multiple-serial card, which allows access to the many serial devices on the market.

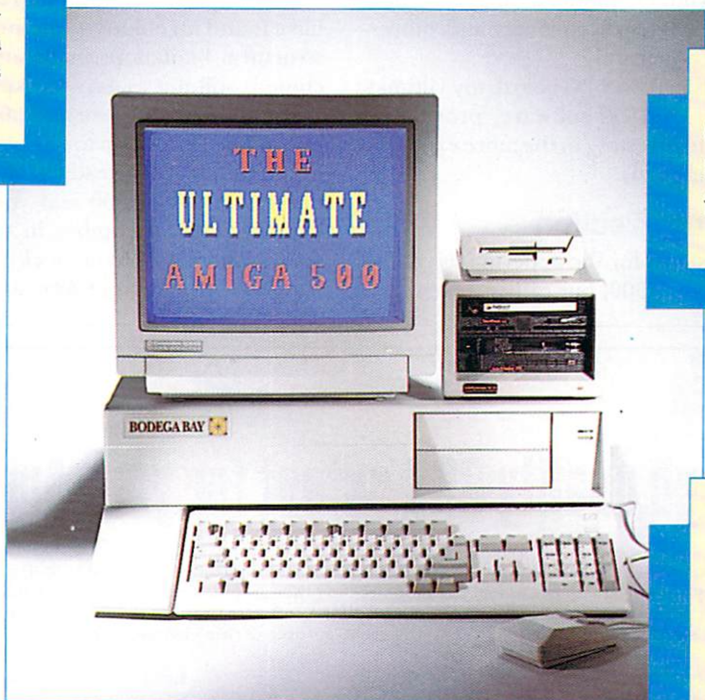
Nexus SCSI interface (Advanced Storage Systems), which accommodates up to 8MB RAM and a 3.5-inch hard drive. Nexus plays host to the SubSystem/SCSI.

Power PC board

Pulsar

IBM PC/XT emulator

Installs in the trap-door slot under the machine and allows access to IBM software.



A1011 drive

Commodore

External 3.5-inch floppy drive

Mega-Midget Racer

CSA

Accelerator/RAM expander

Attaches to the motherboard; provides a 33-MHz 68030 chip, a 50-MHz 68882 coprocessor, 512K of 70-nanosecond static RAM, and up to 8MB of 32-bit fast RAM. Available in many configurations.

SubSystem/SCSI

Advanced Storage Systems

Expansion chassis

Holds one full-height or two half-height SCSI devices.

Inside the SubSystem/SCSI are:

HardPack 44 (Advanced Storage Systems), a Syquest-compatible removable-cartridge drive.

SideWinder 250 (Advanced Storage Systems), a 250MB streaming-tape backup system that also comes in 500MB and 1.3-gigabyte configurations.

churned out integer calculations even faster. In theory, though, the 50-MHz 68882 should perform math functions 50 percent faster than a stock 25-MHz A3000. Numbers don't tell the whole story, though. It's the feel of the machine that really matters. Major applications load in about a second, 3-D objects render with incredible speed, and multitasking barely affects system performance.

But speed is only part of performance. Just as important, the Ultimate A500 is flexible. Its Syquest drive allows unlimited mass storage potential through a media that's portable. The tape-backup system gives you the most efficient means of copying hard-drive contents.

The total of 13 megabytes of RAM is nothing if not flexible (well, expensive, maybe). So is the multiple-serial card, which allows you concurrent access to any of the scores of products—including scanners, audio digitizers, printers, plotters, film recorders, MIDI music devices, laser-disc players and more—that require serial connection.

Thanks to the Pulsar Power PC board, my Ultimate A500 can also run MS-DOS software, providing a low-cost alternative to investing in the more expensive Commodore Bridgeboards.

Resurrection

The A500 chosen as host for the experiment was not a fresh, out-of-the-box A500, but rather a New York City taxi variety. Devoid of its RF shielding and most of the screws that once held it together, it was subject to unaccountable guru errors, plagued by a Caps Lock key that glowed at intermittent intervals, and had been the victim of several dozen disassemblies and hasty reassemblies.

The addition of thousands of dollars worth of equipment, however, breathed new life into its motherboard. Attribute it to the Bodega Bay's 200-watt power supply and its mega-cooling fan, or the aura of the Mega-Midget Racer, but something chased the evil spirits away. Thus revived, the A500 sure played a mean pinball. Gone were the Gurus and the ominous flickering of the Caps Lock key. And the computer never once so much as hiccupped when connected to the Bodega Bay.

In assembling the Ultimate A500, I had to make some compromises. Although third-party developers have found ingenious solutions to many of the A500's structural limitations, it became clear that the machine is still not as easy to expand as an A2000.

Is building the Ultimate A500 a better choice than spending the money for an A2000 or A3000? It's a tough call. If you already have a good deal of money tied up in your A500 and you long to make it the biggest, baddest hombre in town, go for it. But if you're about to buy a stock A500 to turn into the King Kong hot rod of Amigas, I'd think again. ■

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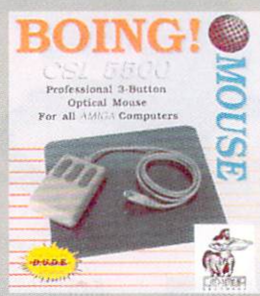
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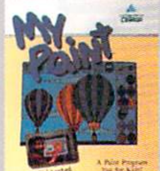
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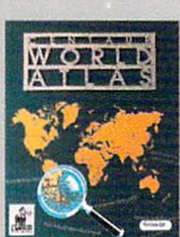
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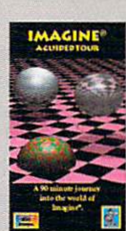
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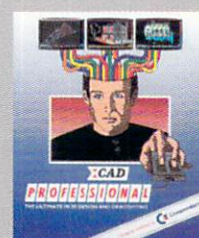
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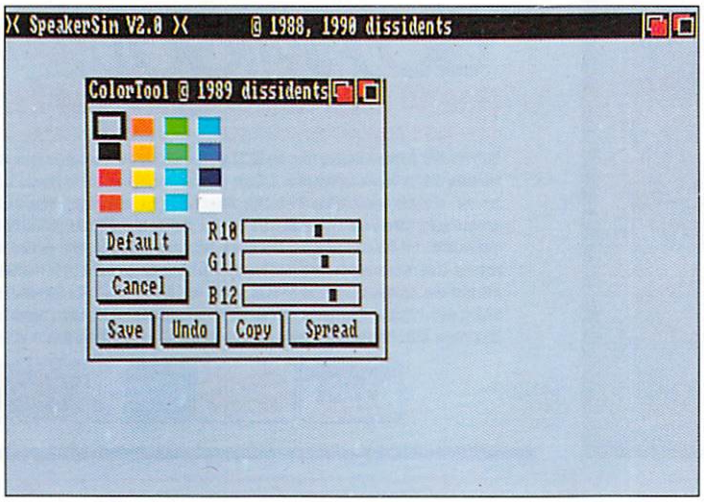
By Jim Fiore

AN OLD SAYING in the programming field is, "The only truly customizable piece of software is the one you have source code for." As true as this may be, giving users the flexibility to alter their work environment is a good idea. A prime candidate for user customization is the main screen's color settings.

How many times have you looked at a new program, only to develop an instant headache because of a hideous color scheme? The interesting part is that you are bound to meet someone who will say "Wow, I really like the screen colors in that program." Obviously, this is one place where you cannot please everyone. Faced with this problem, I decided that a color-palette requester was needed. With it, the user could toss out the default settings and use his own. Once the color palette requester was finished, my friend and co-worker, Jeff Glatt, turned the code into a standard library so that several different applications could use it, thus saving on system resources. With this library, you can add a fully functional color-palette control to your programs in minutes.

Small and Powerful

You can find the library (color.library) and its associated documentation and examples on Fred Fish disk #257 or on BIX (ColorLib.LZH). The code required in your application in order to make use of the library is minimal, and the color.library itself was written in optimized assembly language to make it quite small (about 6.6K bytes). Also, because it uses no uninitialized data, it consumes no extra memory once it is loaded. The library can be called from any language—assembly, C, or BASIC.



The user's view of the ColorTool library.

The color library manages the ColorTool window, which contains an array of controls (see screen shot, below). It will fit within any standard Intuition screen. Along the top are a number of color boxes. Because this application program (SpeakerSim) is four bit-planes deep, there are 16 boxes. The color library automatically determines the right number of boxes for your application, based on the screen depth, so you don't have to worry about it. Up to 32 different colors may be displayed (ColorTool was designed for standard, nonHAM screens).

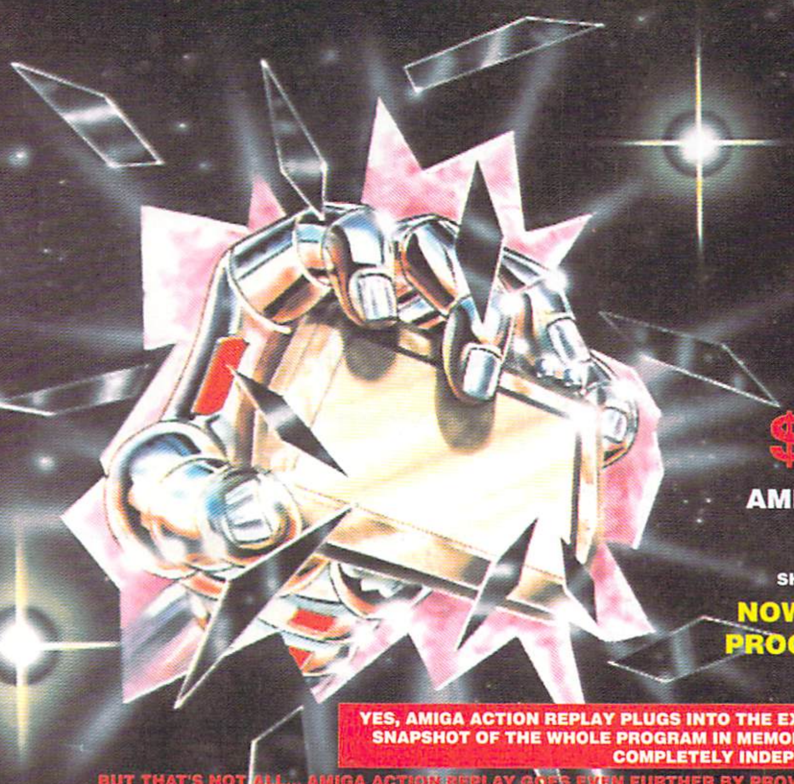
The user picks the color to adjust by clicking on its box with the mouse, then sets the color with the slide controls for Red, Green, and Blue content. The RGB values are displayed in the numeric readout to the left of the sliders. For folks who prefer HSV (Hue, Saturation, and Value) sliders, clicking on the readout area transforms the sliders into the HSV type (clicking again brings back the RGB set).

In addition to the standard Save and Cancel buttons, the user can click on Default, Copy, Undo, and Spread function controls. These create smooth washes of color, quickly clone or move colors, and remove mistakes. Anyone who has ever used an Amiga paint program should have no problem with ColorTool.

Paste It In

For programmers, ColorTool is simplicity itself. The only function in the library is DoColor( ). Because the function is designed to modify the colors of a screen, you must open a screen before calling it. DoColor( ) opens the ColorTool window, handles all ►

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of the user interaction (making changes to your screen's colors), and returns control to your program when the user selects Save or Cancel. DoColor( ) returns a 0 if the user selects Save, or a 1 if he selects Cancel. (If Cancel is selected, your screen's colors will already have been restored.) There are also a few errors that DoColor( ) returns as negative numbers, indicating that the ColorTool could not be presented to the user.

Your program passes two arguments to DoColor( ): the address of the screen whose colors you wish the ColorTool to adjust and the address of a default colorMap. The colorMap is a table of up to 32 16-bit words representing the colors of the screen. When the user clicks on the Default button, the routine loads in these colors. If you pass a NULL (0), then the program uses the screen's initial colors instead. You could use this for an applications preset (or recommended) color setting that is invoked by the Default button. You could also let the user save a color table within a configuration file. Later, this table could become the one that gets passed into DoColor( ) for the Default button.

Here is the library function summary:

```
result=DoColor( defaultTable, screen )
d0              a0            a1
```

where:

```
long result;
unsigned short defaultTable[ ];
struct Screen *screen;
```

Below are the possible returns from DoColor( ).

```
0=user selected Save.
1=user selected Cancel.
```

The following returns indicate errors:

```
-4=library in use, another application is displaying it.
-3=passed a null screen address. Ouch! Programmer's
   fault.
-2=screen has no depth (planes). Please don't do this
   to me.
-1=color window can't open (probably out of memory).
   Buy some more!
```

Although many applications can have the library open and can use it, in the interests of conserving memory, no two applications can simultaneously display the ColorTool. This is hardly a problem for the vast majority of applications.

Take a look below at the example interface code for an application program. This function would be called after the user selects a Set Colors menu item or gadget. Note that the function opens and closes the library rather than having the main program do so at its start or finish. In this way, the library is never loaded if the user likes the default colors. This also allows the program to expunge the library if the system is short on memory. Of course, you'll want to replace puts( ) with some form of requester or title-bar message for programs not run from the CLI.

Assumed globals in the application program:

```
struct Screen *your_screen;
unsigned short your_color_table[ ]={whatever you set it to};
struct ColorBase *ColorBase=0L;

void HandleColor( )
long error_l;
{
if( !(ColorBase=(struct ColorBase*)
  OpenLibrary("color.library", 0L)) )
{
  puts( "Can't open color.library" );
  return;
}

error_l=DoColor( &your_color_table[0], your_screen );

if( error_l < 0 )
{
  if( error_l = = -1 )
    puts( "Not enough memory for this operation" );
  else
  {
    if( error_l = = -4 )
      puts( "color.library in use" );
    else
      puts( "color.library error" );
  }
}

CloseLibrary( ColorBase );
ColorBase=0L;
}
```

As a final comment, please note that the ColorTool library is copyright 1989 by dissidents software. You may use and distribute the library with any software (commercial or otherwise), provided that you do not alter the ColorTool library in any way. There are no pagan fees, Trump-esque licenses, or other forms of rabid capitalist trickery involved. I hope it helps you and your programs. ■

Jim Fiore is co-author of SpeakerSim and MIDI Sample Wrench from dissidents and has written various articles on computer and music related topics for several publications. Contact him c/o AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458, or on BIX (jfiore).*

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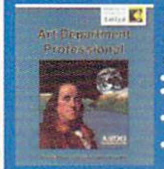


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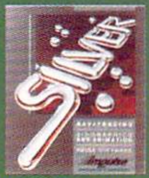


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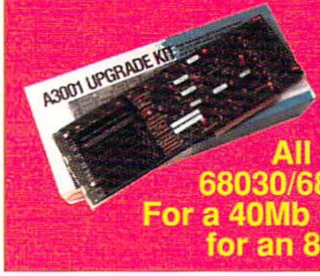


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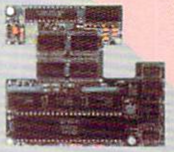
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ACCENT ON GRAPHICS

Freehand Lettering Part 2: Modified Fonts And Special Effects

#27

A continuing series of tips, techniques, and tricks for creating more imaginative Amiga graphics.

By Joel Hagen

WHEN YOU ARE using your paint program to create titles in high-resolution interlace, you may have difficulty finding suitable font styles that are large enough for your needs. In Part 1 of this two-part installment of "Accent," we used line and fill tools to create a title. Another alternative is to enlarge an existing font and use it as a guide for freehand lettering. We'll try this technique here in Part 2 to create a title, and also attempt a special animation trick to add a sweeping glint of light across it. (In the following examples, I will refer to the painting and animation tools in Electronic Arts' DeluxePaint III.)

BIGGER AND BETTER MAKEOVERS

The "S" shown in the small box at the top of the accompanying illustration represents the largest point size I could find in that font style. To try my example, type out the word "STORY," pick it up as a brush, and, using the + key, enlarge it as shown at the upper left. Stamp it down and then choose a contrasting color for a round brush large enough to cover the lines of the letters. Think of the title only as a guide as you trace over the strokes of each letter using smooth, steady movements. Use the u key (undo) whenever you make a mistake, and try the stroke again. If you have enough RAM, use Fix Background from the Effects menu to preserve the original word as a template, even if you have to erase back to it at some point.

Once you have completed the lettering to your satisfaction, erase any stray background pixels from the original word by using Stencil under the Effects menu. Using the right mouse button, lock the color you used for your final lettering and then Make Stencil. Select a different color as background and clear the screen to that color. Stencil preserves the letters of your title. If there are other things on the screen that you must preserve, you may use a large brush and selectively paint over the lettering with the background color to "erase" everything but the locked lettering of your title. When you have finished, select Free Stencil under the Effects menu to free up valuable memory.

You will probably want to take the freehand title a step or two further to give it a polished look. The second "STORY" title from the top shows the completed freehand trace of the original blow-up of the word. In the third version from the top, I picked up the entire title as a brush, selected the Color mode (F2), and used the unfilled-circle tool to trace a small circle with the word. This produced a nice, fat version of the title. I then selected yellow and returned to the freehand-line tool to stamp the title down offset to the upper left. This gives a fat outline effect.

For the fourth version of the "STORY" title, I used the o key to add a single-pixel outline to the entire title after I picked it up as a brush. I added the drop shadow using Color mode to stamp a "shadow" of the title in a shade darker than the background. Outline and shadow effects make irregularities in the freehand lettering seem deliberate. They also flesh out the composition of the title, visually drawing the letters together.

I drew the larger "STORY" title at the lower right freehand, with no guidelines. I used the fat, diagonal brush shown in the box on the right, choosing to let elements of some letters overlap and disappear. I then outlined the finished word

Freehand lettering techniques can add size and body to existing fonts, and yield some stylish animated effects as well.

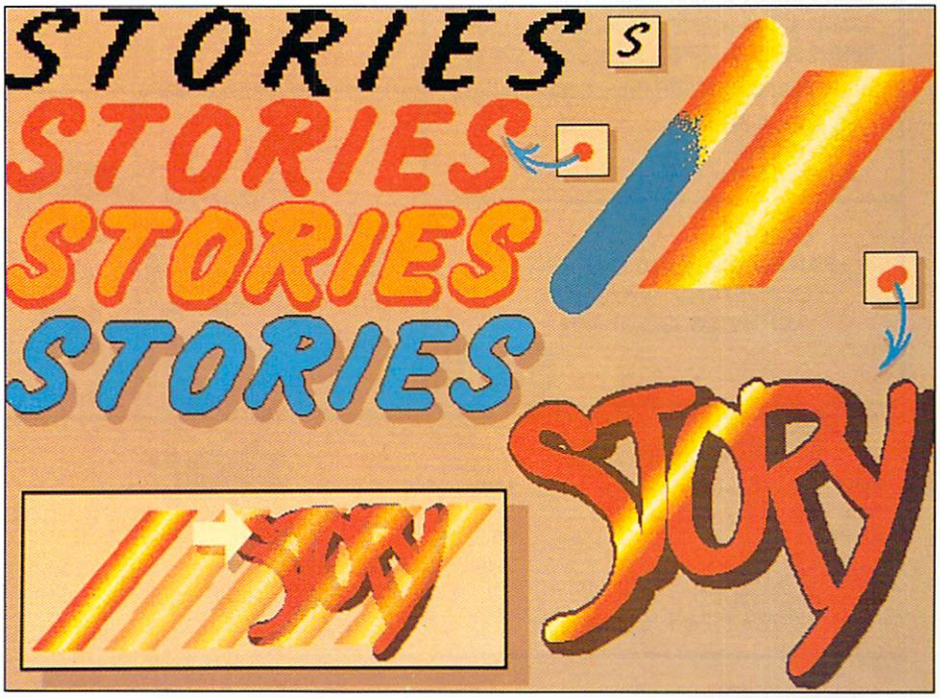
using the unfilled-circle-tool method described above.

SHINE IT UP. . .AND PUT A "MOVE" ON IT!

You probably recognize the "STORY" version at the lower right as part of the complete "COMIC STORY" title shown in the illustration to last month's column—except that we have neglected to mention one missing ingredient. The finished "STORY" contains an animated effect, in which a smooth glint of light sweeps across it. To create the effect, I used DPaint III's animation tools with a gradient filled bar. To follow my example, set up the palette to include the red-orange used in the "STORY" title and a sequential Range of colors from that color to a bright yellowish-white.

Drag out a large round brush and use the straight-line tool to create a diagonal bar as shown at the upper right. Bring up the Fill requester by selecting Fill with the right mouse button. Select the contour gradient fill, and set the Dither slider at about the halfway point. Return to the screen and fill the diagonal bar as shown. Pick up the bar as a brush and flip it in the "x" and "y" axes by pressing the x and y keys. Stamp the flipped brush next to itself to produce the gradient bar shown at the far upper right. Keep this bar on the spare screen.

Compose the title screen to include the word "STORY," which will display the animated effect. Go to Frames/Set # under the Anim menu and establish a number of frames for your animated title—perhaps ten frames for your first try. Using the Stencil tool, first select the red of the story letters, and then select Invert and Make Stencil. This red is now the only color that can receive paint.



The illustration traces the freehand lettering techniques used to produce the finished title at the lower right, including the "glint" effect represented in the box at the lower left.

From the spare screen, pick up the gradient bar as a brush and return to frame 1 of the title-animation sequence. Select the straight-line tool with the right mouse button to bring up the Spacing requester. Select N Total and set it to equal the number of frames of your animation. Make sure Fast FB is deactivated in the Prefs menu.

Hold down the left Amiga key, DPaint's "Animpainting" key, and drag a straight line from the left edge of the word to the right edge. A representation of what this will look like is shown in the box at the lower left. When you are satisfied with the alignment, release the mouse button, and the bar will advance across the word frame by frame. The Stencil limits the area affected by the brush to the contour of the letters in the title. Because the outer edges of the gradient brush are the same color as the letters, the effect of a sweeping glint of light is smooth and even.

Once you understand the basics, you will be able to produce dozens of variations on this effect. In doing so, you can lend distinct style and dramatic effect to a wide variety of your titling projects. ■

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope for a reply.

Design says "Graphics"

By Mitch Wells

WHATEVER TYPE OF multimedia program you create, you want to make sure that your end result is understandable, graphically pleasing, and above all, professional. Once you have established the basic flow of your program and have determined who your audience is, the next step is to design its presentation. You know you should keep things simple, but it's sometimes tempting not to.

Too often, interactive designers are tempted to get elaborate when they discover all that a program like DeluxePaint III can do. You might see a great animation or a fly-by logo or video titling sequence done on the Amiga, and say to yourself, "That's what I want!" But unless you integrate it properly, the user of your program is likely to respond to such a display by saying, "Wow, that's cool. . .what next?" If he does, you have probably failed in achieving the elegant design you are after. Worse yet, it's easy to try digging yourself out of such situations with text screens that explain each step of your presentation. Too much text results in a cumbersome, uninteresting design.

FUNCTION, NOT FORM

Here's a notion that can aid you in gaining simplicity: Form follows Function. The easiest solution to a klunky, textladen presentation is to go back to your program design and extract all the essential parts. Begin by designing the skeleton of your program, using only those elements that help you achieve the *function* of your design. After firming up your design flow, look for ways to accomplish your purpose with as few screens as possible.

Certainly these screens should look good, but if you start with only the necessary elements and then follow some basic guidelines, your presentation has a better chance of being understood without excessive explanation. Embellishing your program with stylistic art should come after you have achieved functionality with the simplest of screens.

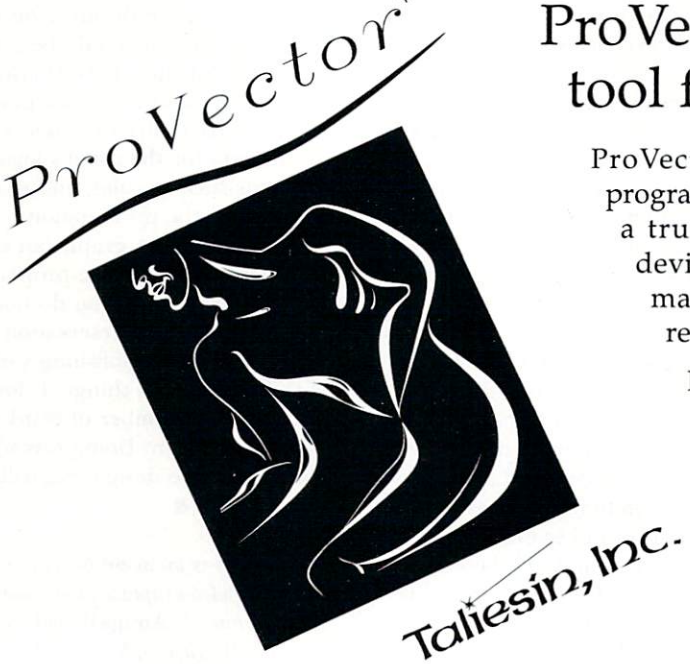
Text screens are a necessary evil, but you should consider them as just that. Keep text terse and to the point, and use simple graphics in place of words whenever possible. Again and again, throughout the process of crafting your program's flow and design, consider your audience—especially when incorporating text and graphics.

Do not expect children, or even adults, to read much text, or to read text that is too colorful. Young children tend to like large, simple, colorful graphics and large, simple text. School-age children and teenagers also like colorful graphics, but they lose interest in images that are too big—these tend to appear childish. Adults, both young and old, are drawn in by graphic objects that are lifelike. Fortunately, these are the easiest to create: you simply need a digitizer or scanner to bring photographic images into the Amiga. Then, you can use a paint program to clean them up or cut out extraneous clutter.

When you use text in addressing older audiences, it is imperative to treat the letters as simple, elegant, graphic objects. Adults are singularly turned off by text that looks "computerish" or "stairstepped." Using high-resolution screens with simple colors or perhaps antialiased text is helpful.

You may be surprised by how often and how easily you can replace text with graphics. One scenario in which you can do so is the ever-popular "For More Information" screen. Rather than asking the user to choose between categories by picking A, B, or C, you would do better to place graphic elements representing the categories as "hit boxes." Then the user can select the graphic representing his area of interest by using a mouse or a touch-screen overlay. Usually, graphics can say more about the choice of op- ►

Draw Your Own Conclusions



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tions—with little or no explanation—than any amount of text that fits on a screen. Having lots of empty space on a screen can help focus attention on the graphics that do appear, further eliminating the need for explanation.

A graphic of almost any object that is familiar to your audience fares better than a word. A picture of George Washington's familiar mug, for example, is much more effective than even the most beautiful text rendition of his name. Using a cow to represent dairy products, or a guitar for musical categories are also good choices. Two caveats here: Be sure to use graphics that are unambiguous. You do *not* want the person using your program to become the least bit confused by what he or she sees on the screen. Also, a screen with more than four choices can clutter the design. Ask yourself: "Do I need 12 choices?" You might consider using the four-category maximum as a personal guideline when designing program flow.

Drawing It Out

Before starting up a paint program, seasoned artists usually sketch their screen-design ideas on paper. These small, quick thumbnail sketches can help you achieve consistency within the framework of your designs.

If you are designing a program for a corporation, university, or school, you might want to use your client's logo as a graphic element to add uniformity, and thumbnails can help you decide where this will work best. Thumbnails can also help you see where a need for elements such as rules might exist. (A rule is some simple graphic, usually a single or double line, that serves either to separate elements on a single screen or to set off a design.)

Another tried-and-true method for designing graphics and program flow is the storyboard. This is simply a sheet of paper containing several rectangles that represent the computer screen, and space below or beside them to make notes about sound, intent, flow, and so on. When key screens are drawn in and numbered in sequence, you can see how sections of your program will look and work.

I use storyboards for everything, and rely on a modified storyboard—a screen graph—to ensure consistency when designing interactive presentations. A screen graph is a full-page blowup of the storyboard screen, overlaid with a grid. The grid helps in deciding on text justification (whether it should be centered, flush right or flush left). It also aids in the placement of recurring graphics, so you are sure to use the same locations on the grid for the client's logo, design elements such as rules, and so on, throughout the presentation.

Finally, a screen graph can certainly be of help to you in the proper use of blank space, so that you do not inadvertently clutter your presentation. You might consider establishing various rules of thumb for such things; I, for example, use a specific number of blank grid boxes per screen. Doing this will hold you to effective design, regardless of the temptations! ■

Mitch Wells is president of AFR International, a video-graphics production company. Write to him c/o AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458.*

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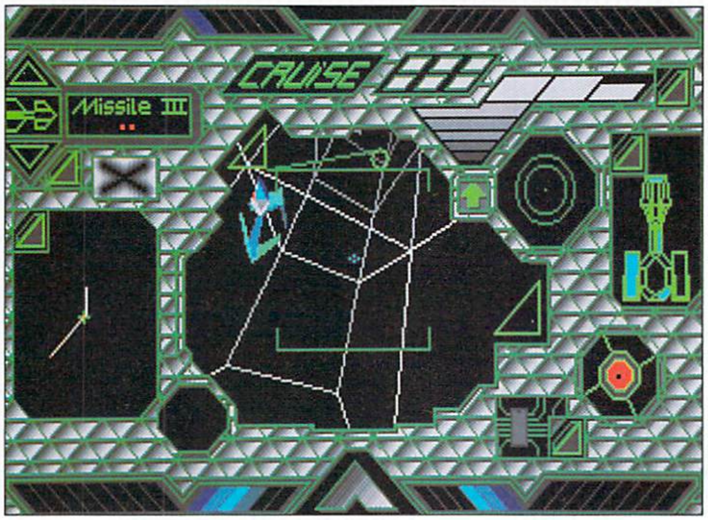
ThunderStrike; Magic Fly

By Rob Lawrence

If you've seen one 3-D simulator, you've seen them all, right? Wrong. Here are two games that fall under the same heading, but suit totally different tastes: ThunderStrike (Live Studios, $39.95) for the arcade junkie and Magic Fly (Electronic Arts, $39.95) for the explorer who loves being lost for hours on end.

ThunderStrike is a futuristic flight simulation in which you compete as a gladiator pilot for television ratings in an arena of high-tech fighter drones out to cancel your show. Lose the viewers' interest, or take too many hits, and you're through. As you seek out enemy drone generators and their mechanical offspring, saboteur droids attempt to knock out your installations. You can choose from five different aircraft to pilot, and maneuverability upgrades are available based on your performance. This helps get you off to a good start, but the game is tough. Not only are you on TV, you control your plane from it. You have a good view from the rear, but the camera doesn't always pan quickly enough on turns.

In Magic Fly, your main objective is to fly into the tunnel network of an enemy planetoid base, find and detonate its nuclear stockpile, and escape in one piece. According to the manual, there are over 30 different types of enemy craft to blast with your hefty array of weapons. A mapping computer is provided to help you navigate through the vast three-dimensional labyrinth, and other systems aid you in repairing damage and regulating energy consumption.



Navigating the tunnels in Magic Fly is only half the job.

ThunderStrike has some peculiar features that set it aside from other simulators of its style, such as the hilly landscapes, a high-speed conveyor track to pull you around the arena (if you can land on it), and various pods to collect, such as turbo or power shot. Although the difficulty increases, a small child could learn to fly ThunderStrike.

Magic Fly, on the other hand, isn't quite as simple to grasp. If the Fly were the Enterprise, your role would be Kirk, Spock, and Scotty—all at once. Over time, you can adapt to its controls, but you may feel overwhelmed at first.

The musical score in ThunderStrike is too short, but the sound effects are good. Its graphics aren't too bad either, but I smell an IBM port. Overall, Magic Fly's graphics are excellent: They have a unique futuristic appearance. Its animation can really move when in wire-frame mode. Fly has no sound track, but you'll be too busy listening for the alarms and tones to notice.

I highly recommend Magic ►

To locate developers of the games reviewed, see the "Manufacturers' Addresses" list on p. 108.

Crib Notes

By Peter Olafson

SEVERAL FOLKS HAVE cyberpunked out on *Neuromancer* (Interplay, $44.95). Usually, they're looking for Comlinks 5.0 and 6.0 and they want into cyberspace. Well, as you might figure, one comlink pretty much leads to another. Comlink 4.0 can be found on SEA, 5.0 on the Eastern Seaboard Fission Authority, and 6.0 on Tozoku Imports. (For the SEA code see Modern Bob on the Panther Moderns system. If you don't have the Eastern Seaboard code, pay a visit to the Gentleman Loser.) Don't be in a hurry to enter cyberspace until you have 6.0—along with a potent array of support software and skills and a solid cyberdeck (like the Ninja). When it's time, use the c-space jack at the Cheap Hotel.

For Tom Barker of Kirkwood, Pennsylvania: To pull off the money transfer from Bank Gemeinschaft, you'll first need to use Cryptology 3.0 to decode the Level 2 password found on the Gentleman Loser, and you should also have a chat with Lupus Yonderboy at Larry Moe's.

• Christopher Michaels of Staten Island, New York is having a monstrous time finishing *Uninvited* (Mindscape, $49.95), and he's not alone. (Either in the haunted house or in his game problems.) Chris, the zombies in the garden maze can't be handled in packs; make tracks if you come across a gang of them. (You may want to check later to see if they're still lurking about.) You can deal with a solitary zombie, however, using the amulet.

You may have noticed that the hole in the locked door in the Magisterium has a distinctive shape. If you've been ►

Fly to the Christopher Columbus-type and ThunderStrike to the action-craving armchair fighter jock. Either one or the other is bound to bring you endless hours of fun.

Chaos Strikes Back

By Peter Olafson

You couldn't improve much on Dungeon Master, and so perhaps it's not surprising that FTL's sequel, Chaos Strikes Back ($39.95), is basically more of the same—only *much* harder. There are no easy kills, no basic puzzles, and no letup.

On the surface, Chaos doesn't look or play very differently than its parent. The perspective is still first-person. The mouse-based interface and the screen layout are as elegant as ever, and many of those vivid graphic tiles and lovely monsters have come over intact. A vengeful Lord Chaos has hidden four pieces of unstable corbum ore in pathways within a new dungeon—each path geared to the gifts of one of the four standard party members. You must find the nuggets and throw them into the Ful Ya pit or say good-bye to the neighboring community of Viborg.

Even though Dungeon Master couldn't be much improved, you could pack it more densely with all kinds of trouble. Chaos does so in a nasty ten-level maze of puzzles, traps and powerful, aggressive creatures. The dungeon is an massive interactive puzzle; it seems to mutate and adapt with your every step, and to pause only when you do. It may not have quite the hothouse atmosphere of DM—it's more an exercise in brain teasers—but it more than makes up in cunning.

The new game is also more flexible, offering a utility disk with a character portrait editor, a hint oracle, and an animated introduction. The editor gives your game a personal touch. You can rename characters without penalty, and give them a total makeover (in 16 colors) if you don't like their looks. (My party has been redesigned to accommodate my wife, friends, and dog.) The hint oracle is another nice addition. The hints are sometimes couched in riddles, and they're not available from within the game itself. The oracle analyzes saved games, so you're more likely to call on it only when you need it. (For the weak-willed and completists, there's also a comprehensive "Adventurer's Handbook.")

I should note that Chaos Strikes Back isn't for everybody. Despite what it says on the package, it doesn't strictly require Dungeon Master to play. (You can create a new party, and even fight a bit, in a new Hall of Champions.) But Chaos was conceived as a DM scenario, rather than as a stand-alone adventure; hence DM experience goes a long way. It may even be essential, as is one megabyte of memory. The documentation is skimpy—no spells list, for instance—and even the relatively advanced new characters may have trouble holding their own.

I recommend this one without hesitation, however, for experienced DM players. For those who haven't played DM, it's as good a reason as any to get started.

Arcade Action; Future Classics Collection; Classic Board Games; Super Games Pak

By Peter Olafson

I'm a suspicious consumer. I tend to shy away from two-for-the-price-of-one packs (except for peanut butter). When I started testing four game bundles, I figured I was going to be up to my keyboard in clones and poor-selling reissues, and that, with luck, I might find a couple of diamonds in the rough. As it turned out, there were far more gems than rough spots.

Arcade Action

The best of the bunch is Arcade Action (Spotlight/Cinemaware, $39.95). This bundle of Onslaught and Stormlord—both arcaders originally released in Europe by Hewson—is the second in Cinemaware's re-release series of top-hole English games, and it's a real bargain. Each game is graphically distinctive and each has some extra oomph in the play department.

Aptly named, Onslaught is a relentless arcade wargame.

through the maze thoroughly, you have just the thing to fill it.

You can't catch the little demon who has the key. What you can do is waylay him with a snack—which happens to be inside a safe. (Just the place for a snack.) You've pretty much been handed the combination. Remember the message up in the main bedroom about a key, and the numbered cards in the study?

That light fixture in the bathroom may look grippable, but you can't grip what you can't reach, and there's nothing at hand to stand on. If only you could float up to it...

The ghost in the bedroom off the kitchen has a nasty disposition, but a timid spirit. If you've made effective use of the Spider Cider on the veranda and have kept the evidence, you'll spook him good. And you don't actually need to do anything to the giant spider except stay out of its way. The hole under the altar in the chapel is a death trap, pure and simple. When you run into the spider again, after going through the trapdoor in the lab, you'll have some maneuvering room.

• One of the first questions I received involved the correct use of the Macaw's recipe in *Guild of Thieves* (Rainbird). If you handled it right (pay attention to the diary here for one particular ingredient), you should wind up with an "anticube." It's needed as a counterweight in the endgame puzzle. That's inside the bank, by the way.

• Another Rainbird oldie: Joseph Buchanan of Indian Hills, Colo., writes that he's stuck behind the viaduct in *Knight Orc* (Rainbird). Joe, the viaduct separates the first two parts of the game, and to get across, you'll need more rope than you've got: the hermit's belt, the goat's tether, the hunter's lasso, the cord in the chest, Rapunzel's hair (!) and the reins from the Green Knight's horse. What could you connect that rope to in order to throw it over the viaduct? Have you visited the innkeeper?

• The storage room in the dwarvish realm in *Journey* (Infocom, $49.95) isn't that tough to enter. Have Praxix read the runes at the gate, and then

Continued on p. 86.

You're a Fanatic (a one-man army trying to control the war-torn land of Gargore) and, honestly, you should have stayed in bed. This one is blisteringly fast, with so much happening on the screen that you'll probably ignore many of the features just struggling to



In Tankbattle, shoot whatever you can't run over.

survive. The object is to fight your way to the far right of the horizontally-scrolling playfield and capture the enemy flag. But there's also a strategic map to negotiate, a boss level against temple guardians, 16 cults and types of troops, 14 army types, ten talismans (which help you through difficult terrain), seven weapons, six scrolls, a hint oracle, and a game editor.

Stormlord is closer to typical difficult English arcade adventure. (You're trying to rescue the Realme of the Faeries from Badh the "rotting crone." Yech.) What separates it are large, smoothly moving sprites and lovely fantasy artwork—from the eagle that serves as teleport between level segments to the very naked faeries that populate the game.

Future Classics Collection

What sets Future Classics Collection (Live Studios, $39.95) apart is its small scale. All five of its games are delightful miniatures, and together they're just great. Blockalanche may be another Blockout/Tetris clone, but it has an angled-down perspective that's unique in this sort of game. Tankbattle has some nice graphic touches and adds new animated obstacles and enemies to the old tank-battle game. (Bushes look squashed when you run over them.)

Lost 'n Maze won't worry the dungeon masters at FTL, but it's a very smooth-scrolling and supremely difficult treasure-finding maze game; I'd forgotten that something so simple could be so much fun. Diet Riot is a Pacman variant, but with a clever twist for these weight-conscious times. (The fast food chasing your cute little guy doesn't kill him. It makes him fat, which he can work off if you get him to a weight room.)

My favorite is Diskman, a gnawingly difficult puzzle/maze game. You control a little fellow roaming a maze in search of the disks to open the exit door, the keys to open the door to the disks, the bombs to blow through the walls to the keys, and so on. I dare you►

to stop playing once you start.

Classic Board Games

Even Classic Board Games (Merit Software, $29.95) was a modest surprise. It offers respectable versions of chess, checkers, and backgammon for play against an aggressive computer opponent or a friend (via modem). The three-dimensional graphics are decent (the sound is rather nominal). Also, the lines are numbered in the manual to help out with the simple copy-protection.

Super Games Pak

The largest single game in the bunch was Deathbots from Super Games Pak (ODYSSEY Software, $39.99). It's a two-disk maze shoot-'em-up (a third disk holds an animated intro) in the style of Berzerk. The graphics are strong, and there's digitized sound at every turn. But there's also a significant gaffe. While it presents the maze from an angled-down perspective, the player's character and the robots are seen in cross-section, and the combination significantly trims the strategic options available to the player. The robots you're gunning down are so big and plentiful that there's almost no way to avoid or trick them (which was the real fun of Berzerk), and the game becomes an exercise in bulling your way through tons of sprites—not much fun at all.

Super Games Pak also contains Jailbreak and Byte Man, which are over-the-top versions of Breakout and Pacman. Jailbreak has 100 levels and a powerful editor to build your own. Byte Man could use an editor. The first few of the 32 levels struck me as rather similar. The problem is that these two don't offer anything much different from the games that inspired them. Those mold-covered originals have already been cloned to death, and I'm not sure there's a need for more. It's sort of a shame, too, as the energy and enthusiasm that went into the pair is evident right down to the pregame and between-level screens. Perhaps next time ODYSSEY should put it all into one great game.

Dragon's Lair II: Time Warp

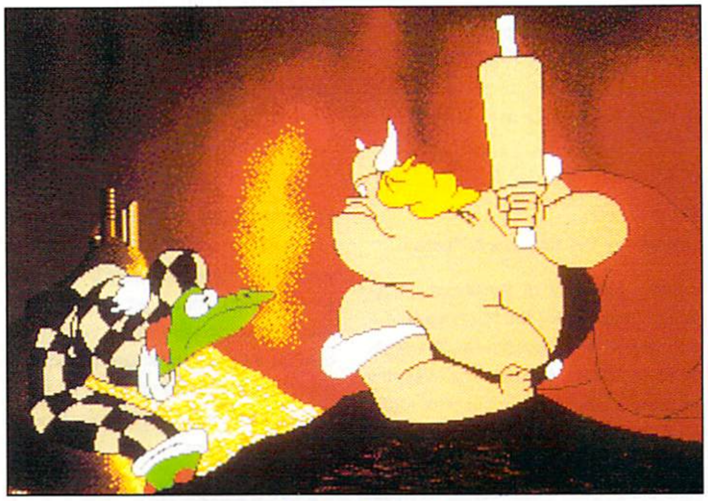
By John Ryan

In Dragon's Lair II: Time Warp (ReadySoft, $59.95), Princess Daphne has been kidnapped by Mordroc, a corrupt wizard who will force her into marriage unless Dirk the Daring can rescue her. Dirk must travel back into time and defeat Mordroc before the wizard can place an evil wedding ring on Daphne's finger, thus trapping her forever in a time warp.

As with the first installment, your control over Dirk's actions is limited to quickly indicating whether Dirk will fight or move in a certain direction. Indeed, the entire game is nothing more than a long series of animations punctuated by a few precisely timed joystick movements. More often than not, success boils down to practicing each scene over and over until your reactions are automatic.

While Dragon's Lair II continues its predecessor's tradition of marvelous cartoon-like characters and fluid animation, it unfortunately also contains many of that game's drawbacks. First and foremost, Dragon's Lair II uses on-disk copy-protection, which pre-

vents you from installing the game on a hard drive. The game resides on six floppy disks, and its flow is often interrupted by disk loads between scenes. In addition, while the animation and sound effects are certainly captivating, this aspect becomes secondary after you have to renavigate the same scene over and over. With only three lives, it will take you hours to become familiar with the moves and timing needed to successfully pass through each of the 46 sequences. Save the game often to avoid having to restart from the beginning.



The graphics are great, but the situation is grim.

Relying more on memorization than tactical skill or joystick prowess, Dragon's Lair II reinforces the old axiom that great graphics and sound alone do not make a good game.

BUCK ROGERS: COUNTDOWN TO DOOMSDAY

By Graham Kinsey

In Buck Rogers: Countdown to Doomsday (SSI, $49.95), you lead a group of new NEO (New Earth Organization) recruits in defense of Earth against the attacks of the Martian-based RAM empire.

At the start, you can use the predesigned party or create your own. For the latter, you choose character attributes and divide your skill points among the 50+ skills. Some skills have prerequisites; for example, use of the Navigation skill requires that the character first have devoted points to Astronomy and Mathematics.

With the party ready, your adventure starts at the Chicagorg Spaceport in a violent scenario that is almost exclusively combat-oriented. Party-to-party combat is a major component of the game, and Buck Rogers' combat simulator requires you to make many choices and decisions. In addition to controlling your own characters during the fight, you can try to direct friendly forces via the Leadership skill. The game makes over two dozen weapons available and factors weapon ranges and rates of fire into combat.

The game's movement window is usually a simple 3-D perspective view. While you ►

don't need to type in commands, you are often forced to respond to multiple-choice questions. You'll find plenty of details as the game progresses, but many scenes are supplied in the manuals in log-book entries. During play, the computer will refer you to a specific log entry in the manual. (If you really feel like more reading, tackle the included full-length Buck Rogers novel, *First Power Play*.)

While many facets of the game are complex, the presentation is shallow. (Too bad for a game that requires one megabyte of RAM.) The graphics are mediocre at best. The sound effects are not bad, but the musical scores are awful. You can install the game on a hard drive, as it uses only manual copy-protection. While it runs fine with my A2630 accelerator, the A3000 gives it trouble.

I found no problems with the game itself, but I was not excited. I wouldn't rush out to buy Buck Rogers, but I would give it a long look if I could find it discounted. ■



What are we going to do, Buck?

From p. 82.
simply say the first word, "Lorem."

• Omar Siddique of Baltimore, Maryland, is looking for the Earth system—and Mars in particular—in *Starflight* (Electronic Arts, $49.95). The system's at 215-86, and you should visit Mars, Earth, and Venus. The latter two are good colony candidates, while Mars and Earth both have useful devices. (Set down at the North Pole of Mars.) As far as other things to do, it looks as though you have what it takes to get friendly with the Veloxi.

• Rob Sasso of Wayne, N.J., writes of trouble purifying the 16th archipelago in *Archipelagoes* (Britannica, $39.95). I haven't played the game as much as you have, Rob, but here's a detour (read: cheat) until I get to your level. After finishing the first two island chains, hit the return key to pick another, type in 8421 and hit RETURN two more times. Now you have a world of choices.

If you are hopelessly lost in a game, or just feeling slightly befuddled, you can reach me by US mail at 12 West 104th St., Apt. 3E, New York, N.Y. 10025, or via E-mail on GEnie as P.OLAFSON and on People/Link as Peteroo. Send a SASE if you'd like a personal reply. ■

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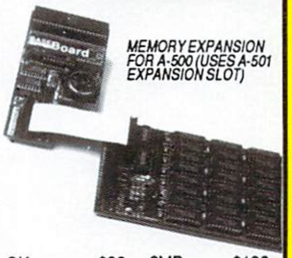
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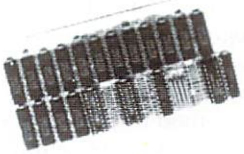
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From p. 16.

EZ-FM

High fidelity, low learning curve.

By Steve Quinzi

AS MOST OF us know by now, sounds produced by means of hardware can often be replicated by software. This is where EZ-FM ($59.95, The Other Guys) comes in—with it, you can create Yamaha DX7 synthesizer-like FM sounds on your Amiga. In addition, if you also have Synthia Pro (The Other Guys), you can also transfer the sounds to a sampler for higher-fidelity playback.

FM synthesis is the method of sound production utilized by the Yamaha DX7 synthesizer. Briefly, FM (Frequency Modulation) is a synthesis technique that produces complex waveforms by modulating one sine wave, called a carrier, with another that's called a modulator. An envelope generator controls the modulator's rate of effect over the carrier.

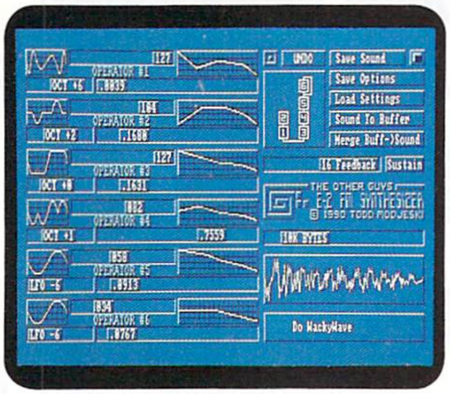
Yamaha implements this technique by offering six sound generators (operators) that you can assign as either modulators or carriers in any of 32 possible routing configurations (algorithms). Since you can set the modulators to frequencies within the audio range, the waveforms produced are rich in harmonics. Add to this the fact that there are six envelope-controlled operators acting upon one another dynamically, and you have a perfect method for creating complex and exotic waveforms.

Give Us a Sine!

When I first heard about EZ-FM, I assumed that it would be a stand-alone version of Synthia Pro's FM page. EZ-FM, however, turns out to be far more extensive than the single carrier/modulator configuration available on Synthia Pro. In fact, EZ-FM closely emulates the synthesis architecture of the DX7, offering six operators and 32 possible algorithms. Anyone accustomed to programming a DX7 will feel right at home with this program.

EZ-FM's straightforward layout resides on a single screen with numbered control boxes occupying the entire left side. Each box represents one of EZ-FM's six operators. By clicking on the Waveform gadget located at the far left of each box, you can select one of eight available waveforms (an improvement over DX7's operators, which are limited to sine waves). You can control static amplitude levels for each operator with a slider located in the screen's center.

To the right, the Envelope gadget opens a window where you can graphically design the operator's envelope shape. Once you arrive at the shape you want, click the Update button, and the new shape appears in the Envelope gadget. EZ-FM's envelope generators are the traditional four-stage ADSR (Attack/Decay/Sustain/Release) type, which, although easy to work with, are, in my opinion, unnecessarily limiting; I think the program would benefit greatly if it had more comprehensive envelope generators.



EZ-FM's array of scopes for fine-tuning.

The method of setting an operator's frequency took some getting used to. While the DX7 uses a ratio system, EZ-FM defines specific frequencies. There are two sliders, one to set the octave and another to set the "offset." The offset control divides the octave into 2084 discrete frequency values, ranging from from .0000 to .9995. A table in the manual converts frequency values to note names, but if you want to get the same frequency ratios as the DX7, you have to do a little homework. As the DX7 uses the overtone series as a basis for setting the frequencies of its operators, you can make up a table that converts the overtone series pitches (related to the desired root pitch) to the corresponding octave and offset settings on EZ-FM. This will now be your starting point.

To the right of center screen is an Algorithm gadget that displays the currently selected algorithm. Click here to change to any of the other 32 that are available (exactly the same as the DX7). Use the slider below to control the amount of feedback (feedback routes the output of an operator or group of operators back into its input). The values here range from 0 to 16, a finer gradation than that available on the DX7.

The only way to get a sound into EZ-FM (other than creating one on the spot) is to load a setting file. This is analogous to loading the parameters of a synthesizer patch. After loading such a file, click on the Do gadget, and the program calculates a sample based on various control settings.

EZ-FM then displays the results in the Waveform window. Clicking on this window will open the larger Wave Examiner window, which provides zoom and position sliders plus a very nice feature that animates a single wave cycle just like an oscilloscope. With the sample-size slider, you can alter the overall waveform length, which proportionally changes all envelopes to match. The maximum sample length is 64K.

EZ-FM allows you to play your sample from the Amiga keyboard. The program includes a sustain switch that will hold the sound to its full duration even if you release the key quickly. Unfortunately, there is no MIDI control.

For the Record

Once you are ready to save a sound, the Save Options gadget offers several choices. You can save the parameters of the sound as a setting file for use with EZ-FM later on, or you can save the waveform as a sample in one of three formats: the one- or three-octave standard IFF, Audio-IFF eight-bit, or Audio-IFF 16-bit. You also have the option of including a setting file with any of these. If you select the stable LFO (Low Frequency Oscillator) option, any operator designated as an LFO will not be transposed up the octave in a multioctave file.

Although EZ-FM does not include certain parameters, such as global LFOs and pitch envelopes, this is not a great problem, as you can load sounds created in EZ-FM into Synthia Pro to take advantage of its numerous effects generators. Synthia Pro's pitch shifter, for

YOUR TURN!

My first impression of EZ-FM is that it is easy to learn. I don't like having to wait for waveform computations; I find that annoying.

Mitch Esformes
Boca Raton, Florida

example, can serve as either a pitch envelope or an LFO to modulate frequency, while its AM-modulation generator can act as an LFO to modulate amplitude. The only problem with using Synthia to complete your FM sounds is that EZ-FM and Synthia Pro do not multitask with one another. This is quite cumbersome; a switch to disable the audio device so that you could at least go from one program to the other without shutting down would help matters considerably.

EZ-FM is a must-have for anyone who is really into FM synthesis. It is also an excellent way to learn about this technique and about synthesis in general. The sounds are unmistakably FM, sort of like having a DX7 (without the performance features) in your Amiga. I would really like to see MIDI control and multitasking with Synthia Pro on future updates, but I realize that given EZ-FM's current price, my wish list may be unrealistic. In any event, the program is a worthwhile addition to any Amiga music system.

Video Tools

Video-O-Matic.

By Geoff Williams

YOU NEED VIDEO utilities? There's a package that has not just one or two, or even ten.... Friends, Video Tools ($299.95, Eschalon Development) has 16 different handy utilities for video production. You also get 14 fonts, four ColorFonts, and 37 brushes. Now, you might not buy any of them if you were offered only one at a time, but there are enough elements in this package to warrant a serious look.

Video Tools (VT) offers several titling utilities for putting text on the screen, all with nearly identical interfaces for ease of use. You can save a text file created in one module and load it into another with its colors, fonts, and other parameters intact. They all let you load a font, set styles with bold, italic, drop shadow, outline, and anti-aliasing, specify the justification (right, left, center), and modify the colors. Once you set these attributes, you can save them with the text file. The text files are originally created as ASCII files in any word processor.

VT's scrolling credits-display module, Creditor, lets you roll your acknowledgments just the way credits are run at the end of television shows. The variable-speed scrolling is not nearly as smooth as with Broadcast Titler (InnoVison Technology) or Pro Video Post (Shereff Systems), but it is acceptable in some ►

cases. With anti-aliasing on, however, the text looks blurry as it scrolls. Unfortunately, with Creditor, you must set all your text in a single font size and color. This falls short of professional quality, which should be able to set different lines of text in different colors and sizes. This failing is found in all of the titling modules.

Moving Right Along

VT's Scroller module moves text along in a single line across the bottom of the screen. This function works well unless you set the scroll speed beyond the halfway mark, when, for some reason, the text tears and becomes blurry.

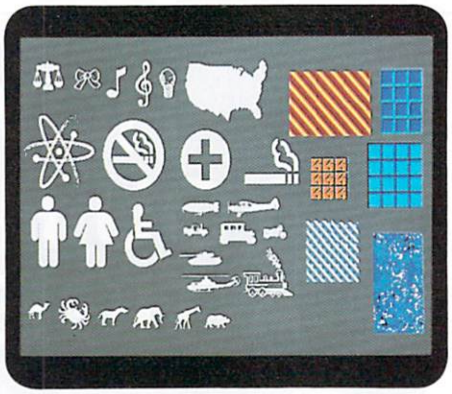
By creating a text file and numbering sections of the text, you can call them up at random by number and scroll them on the screen so that a speaker can easily read them aloud. This is one of the least effective of the tools in the collection, however, as it does not do what a real TelePrompter should. For example, you cannot highlight text with different colors to separate instructions from the text to be read, nor can you separate the text for two narrators. Also, most teleprompters in studio situations have the monitor reflected in an angled piece of glass, but this requires a mirror image on the screen so that the text is readable when reflected. VT's utility does not do this. *(Editor's note: Eschalon Development reports that it will include reversed text display in the product's next revision. Upgrade release information was unavailable at press time.)*

When I first tried to use TelePrompter, I found what I believe to be a bug. After about 250 characters, TelePrompter dropped the rest of the text in a paragraph. While the manual does not say so, you can solve this problem by putting in hard returns after the end of each line.

In Video Tools' defense, though, I should point out that none of the teleprompters for the Amiga offer color highlighting, and only one offers mirrored text. There is a better teleprompter for the C-64 than for the Amiga, which badly needs one that is of professional quality.

Subtitles is the best of the titling programs in that it works well without any compromises or limitations. Click the mouse and the next subtitle appears instantly on the screen, neatly formatted. The anti-aliasing in this module is very effective in making the text look smooth.

VT's collection of utilities for creating multimedia presentations includes Ascension, the player program (which is not freely distributable). It has no interface of its own, so you must get to it via a script icon. You can create scripts for it in a word processor or use Ascension Maker, with its point-and-click interface. Ascension does not rival TV*Show 2.0



VT's brushes for embossed effects and fills.

(Zuma Group) or Deluxe Video III (Electronic Arts), but if you do not have a multimedia program, it does handle the basics of showing pictures. It also plays animations and sounds very readily and lets you run ARexx and DOS commands. I do like the selection of 40 transitions, which are nice and smooth. Also included is VT Presenter, which offers all of the Ascension options, but can be called and controlled through ARexx.

VT's Generators are utilities for producing a variety of images and graphics on screen. Each generator lets you set normal or video resolution in NTSC and PAL. Of all the tools in this collection, these are the best; they alone are worth the price of the package.

Video Slate is a simple slate that lets you type in five titles of ten characters each, followed by a description of up to 23 characters (although you can type in 28). You can optionally display the time and date. This module would be more exciting if it had some extra features, such as a countdown, as has the PD Slate program, or a hot-key to bring the slate to the front and increment the scene number each time.

Test Patterns

For generating test-signal images by means of which you can align your monitor and your video signal, use Pattern. Its utilities are Stability, Linearity, Focus, Convergence, and Convergence 2. These are good to have, especially as there are expensive stand-alone boxes in the video world that do this sort of thing.

VT's Safe Area Generator is another feature that would cost a pretty penny if you bought it as a piece of video hardware. This utility produces markers on all current screens, so that you can identify what areas will be off the screen on a regular TV. You can easily adjust the position and color, and it works with DeluxePaint or any other multitasking program.

Using color bars is an important skill to have when you're working with video. With VT's Colorbars, you can display standard bars as well as Straight, Grayscale, and Luminance. You can also generate a 1-KHz tone with adjustable volume, add a short message to the bars and display the time and date.

I used VT's Background Generator for a recent video project, and it saved me quite a bit of time. This utility lets you generate a background by stamping down a brush in a tiled or wallpaper pattern with adjustable spacing. If you need to experiment before getting the right look with this effect, you will find using VT is faster that doing it in DPaint III. You can also make the brush overlap itself, which you can do only by hand in DPaint. The perfect companion to this utility would be Joe Kagerer's Pro Fills, which gives you a collection of brushes to use for generating some very nice backgrounds.

I found highly useful the Background Generator's ability to produce an extrusion effect on the brush to create an embossed look. You can set both the light direction and the extrusion depth. The same thing is possible in DeluxePaint III, but VT is faster and easier. By lending a dithered pattern to some angles, it can also add a third shadow color for areas that would be at an angle to the light. Again, this would be a chore to do in DPaint.

But Wait; There's More

I did not expect much from the fonts included in this collection, but they are actually quite good. You get four Colorfonts and 13 regular fonts, all in sizes

large enough for video use. The Colorfonts are usable and attractively designed. The monochrome fonts offer a good selection of basic types, including variations of Helvetica and Times.

VT provides nine color brushes for doing fills with the Background Generator. Some of them are useful, but they are not exciting. There are 28 monochrome brushes to use for embossed effects. The idea of including brushes of different objects is excellent, but in this case poorly executed. More thought should have gone into what images are needed for video. Most of the images included are not useful, and many are too finely detailed for video work.



YOUR TURN!

Video Tools works fine for us. We also use Title Page (Eschalon), and VT really makes it more complete. I never did like not being able to control the background with Title Page. Eschalon's customer service is definitely the best, and really patient, too.

Scott Cutlip
West Palm Beach, Florida

VT also offers a collection of utilities to let you show text, display pictures, load the IFF.library (required by Ascension), and reassign fonts. There is also a Font Manager.

Although there is room for improvement, the bottom line is that I can definitely use several of VT's utilities for my video work, and to me that makes it a good investment.

Macro Paint

A really big paint box.

By Phil Fitzpatrick

IF YOU HAVE longed for a way to create great full-color images at high-resolution sizes, Macro Paint ($139.95, Lake Forest Logic) can load any IFF image, including dynamic hi-res and 24-bit pictures. Macro Paint remaps the image palette line by line, thereby increasing the number of available colors. The result of this rather intriguing approach is high-resolution graphics with a simulated 4096-color display mode. The current version (1.05) is capable of producing some striking effects, but in many areas it misses its mark.

Macro Paint's authors obviously paid considerable attention to producing a comprehensive software package to cover drawing, painting, and image processing; it even includes an ARexx interface. The program is not copy-protected, and it readily installs on either floppy or hard disk, even without the utilities provided to make the process easier. It also supports four ARexx gadgets and custom ToolTypes that you can edit to specify your default Preferences.

RAM: Food for Thought

Getting Macro Paint off the ground is as easy as double-clicking the Macro Paint icon from Workbench. This opens a requester for fine-tuning the program's configuration settings to your liking. I was able to find my way around Macro Paint's screen, which, like Digi-Paint 3 (NewTek), opens a Toolstrip, or gadget menu, across the bottom. There are also pull-down menus, clearly marked tools, a palette, and four ARexx macro gadgets that you can easily locate without consulting the manual.

The Toolstrip provides the standard array of drawing tools: lines, circles, rectangles, and ellipses, plus airbrush, flood fill, and a brush-type selector. A gradient fill tool, however, is not provided. The Toolstrip includes pairs of halftone and stencil gadgets and tools for adding text, cutting and pasting, and performing such region operations as grid and magnify. The menus expand the functions of the gadget tools and add some extra features—such as image processing—of their own.

The manual indicates that Macro Paint operates under 1MB of RAM, but it recommends at least 2MB. On computers with 3MB or more, the program runs in all its modes and multitasks nicely, but keep track of what's running in the background. I was able to run the program on both an A1000 and A500, but only in the 640 × 200 mode. Ventures into brush operations popped up insufficient-memory warnings, which, with few exceptions, ended in a visit from the guru.

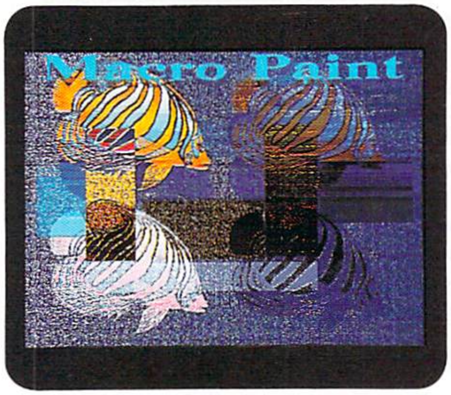
As a drawing program, Macro Paint ►

offers the standard fare. The two halftone tools furnished are actually fixed tints, created by coloring alternate pixels (which limits their use). In the absence of a ready-made tool, it is possible to simulate gradient fills using ARexx, but the airbrush tool attempts to fill a square block, and any significant amount of "spray" makes the square edges obvious. You can overcome this problem, but not without aggravation.

Don't Forget To Brush

Macro Paint's brush and region image-processing applications are by far its most interesting features. Evidently, a major effort was spent on developing the cut-and-paste portions of Macro Paint; though not flawless, they are the most useful tools. Both region and brush operations can coexist and are fundamentally similar. Both permit vertical/horizontal image flipping; red/green/blue color masking; conversion from color to black-and-white monochromes; tinting and increasing the lightness or darkness of the image; and positive/negative conversion by color complementing.

With sufficient memory, you can cut some fairly large brushes, but a screen-size brush is too much to ask. Once it's cut, you can flip your brush vertically or horizontally, rotate it in 90-degree increments, and paste it normally. Or, you



Macro Paint is capable of importing 24-bit files.

can take advantage of a number of available effects. For example, you could blend your brush into a background based on an adjustable tint percentage (1–100%). Additive and subtractive modes produce effects similar to inverting or complementing colors. Brushes are displayed to the screen only as square outlines of their areas—regardless of the shape cut out. Unfortunately, this eliminates any chance of precise positioning.

Although Macro Paint's claim to support a virtual display limited only by available memory is true, 640×400 is the maximum practical size for two reasons. First, because the Toolstrip can't be repositioned and doesn't compensate for overscan, your color palette is off screen and out of reach in this mode. Second, if you toggle the Toolstrip off in overscan mode, the image splits in half, swaps halves, and distorts.

Macro Paint can load any IFF image—any size and scale—from lo-res 320×200 pictures to 640×400 hi-res. Although it does an excellent job of scaling 320×400 HAM up to 640×400 (it can also upscale 320×200 images), the program's ability to scale images from lo-res to hi-res works correctly only if the number of vertical lines is equal (i.e., 320×200 to 640×200). Importing 320×200 images as brushes without scaling them up, however, enhances them significantly, opening up some very interesting possibilities for lo-res digitized pictures.

Presumably, Macro Paint's Load Region selection on the Project menu loads images into a currently defined region, but it totally ignored the region I specified. For example, creating a vertical rectangular region in the middle of the screen and then loading an image might result in filling a horizontal area at the edge of the screen on a good day, or nothing at all on a bad one.

Once you are ready to print, you need to choose whether or not to load your page into RAM. If you choose not to do so, thereby saving memory, Macro Paint proceeds by sending information to your printer in strips. Don't plan to go for coffee while your picture is printing, however, because you will need to respond to a requester after each strip is printed. On the other hand, if you choose to print from RAM, there's no turning back once printing is underway. I never saw the Cancel Print requester promised in the manual.

You can modify printer Preferences from within Macro Paint, but whenever I tried changing the settings, my computer

Continued on p. 97.

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From p. 94.

crashed. The results from the LaserJet, DeskJet, PaintJet, and Canon PJ1080-A printers and drivers I used to test Macro Paint varied from prints the size of postage stamps to those that were simply out of proportion. Any attempts to force larger or proportional images from within Preferences did print, but the program crashed afterward.

A Rosier Future?

The largest disappointment was Macro Paint's ARexx interface. The capability to execute ARexx macros from menus and gadgets worked extremely well and certainly deserves applause for innovation. Lake Forest Logic claims over 80 available commands designed to reinforce and augment the program's normal functions. As documented in the manual, however, some commands that receive or pass screen coordinates and color information to and from the program operate backwards. My experience revealed that at least half a dozen commands could not be coaxed, teased, or threatened into working. This obviously limits the use of ARexx.

Lake Forest Logic may have hurried this version out the door, but the company seems to have every intention of supporting the product. Not only does it provide phone and fax help lines, but it also offers free upgrades to registered users by way of its BBS.

Baby!

Electric Thesaurus

Expressive delivery.

By Loren Lovhaug

ON THE GOLF course, choosing the right club can mean the difference between the green and the pond. To a writer, choosing the right word is equally important in order to effectively convey ideas. While authors do not enjoy the luxury of consulting a caddy when making these decisions, they often turn to the next best thing: a thesaurus. Typically, electronic versions of this valuable tool accompany word processors; taking a different tack, however, Micro-Systems Software (MSS) and Softwood Inc. offer their thesauri as stand-alone products.

What is the benefit of a stand-alone thesaurus? By taking advantage of the Amiga's multitasking ability, these programs let you explore uses outside the realm of typical word processing. For example, while composing on-line dissertations, I have often dearly wished for convenient access to an electronic thesaurus. In the same vein, I know many desktop publishers who would trade their left arms for such access while performing a final edit from within a page-layout program. Both MSS' Baby! ($29.95) and Softwood's Electronic Thesaurus (ET) ($49.95) offer this potential.

These programs share many features in addition to stand-alone operation. For example, both can be run from either Workbench or their own custom screens. Both provide synonyms and meanings identified as parts of speech (nouns, adjectives, adverbs, and so on). Also, both packages have similar user interfaces. In order to look up a word, you simply type it into a text gadget and press the Return key or click on a button. Once it locates your word, either program immediately presents information pertaining to that word.

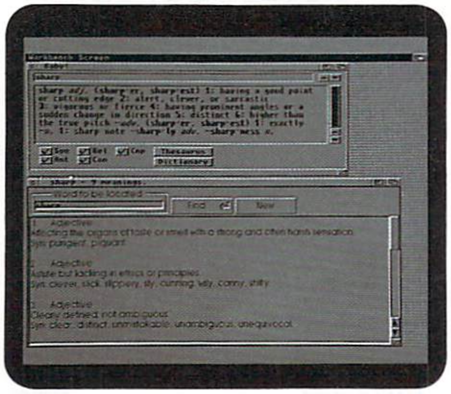
In addition, both programs let you select words in the display window for automatic lookup, thereby alleviating a great deal of typing when you are on a roll. Finally, both can automatically look up any word you paste to the AmigaDOS clipboard device and return alternative word choices to the clipboard.

Word Up!

With all the features they have in common, the products have significant differences. To create ET, Softwood licensed Houghton Mifflin's *Roget's II: The New Thesaurus*, with over 500,000 word entries, while Baby! evolved from the *Merriam-Webster Thesaurus*. The Webster reference touts a massive 1.4 million words in its library.

Despite their dissimilar heritage, I did not find significant differences between their selection of meanings or synonyms on a case-by-case basis. In addition to synonyms, however, Baby! offers antonyms and related, comparative, and contrasting words.

Due to its more extensive database, ►



Baby! has much to impart.

Baby! eats up about 1.8 megabytes of storage when fully installed, whereas ET gets by with only a tad over 390K. Obviously, this precludes using Baby! from floppy disk, but you can load either program into RAM, providing you have sufficient memory.

Baby! is more comprehensive than ET and offers information much in the same way as a dictionary, providing not only syllable breaks but also word derivations. Moreover, Baby! includes an automatic phonetic search-and-suggestion facility, which means that if it cannot locate the word you typed in, it automatically suggests phonetically similar words. This capability obviously is a great boon, especially when your spelling is less than perfect.

In spite of Baby!'s additional capabilities, ET outshines Baby! in one area by the inclusion of an ARexx feature. Because Softwood built a complete ARexx interface into ET, you can automatically pass synonyms, definitions, and usage information among different applications. In addition, you can control and access practically every Baby! function from other applications via ARexx. For instance, for utilization with my ARexx-compatible text editor, I constructed a macro that automatically instructs ET to look up any word immediately following the text-editor cursor and to place that word's definition at the cursor position.

This kind of inter-program communication and control is far more sophisticated than the simple one-word-in, one-word-out clipboard support provided by Baby!. With more than 75 popular Amiga applications now supporting ARexx—including AmigaVision (Commodore), Prowrite (New Horizons), and ATALK III (Oxxi)—plus ARexx's inclusion in AmigaDOS 2.0, there are numerous opportunities for inter-program use of ET.

YOUR TURN!

I use Electric Thesaurus (with Pro Page) for a couple of newsletters I do. When I need a $10 word, I just pick up something from ET—it's great!.

Joe Benedetto
Glendale, Arizona

Which package should you buy? It's a tough call. Both Baby! and ET are quality packages. Both are well documented, easy to use, and apparently bug free. Baby! costs less than ET, its linguistic database is larger, and it provides an extremely useful phonetic-suggestion facility.

On the other hand, ET is smaller, so it can be used from floppy disk and in systems with limited memory. Moreover, its fully implemented ARexx port opens up an immense amount of potential for use as a core resource for word games and educational applications.

B A C K T A L K

CANDID RESPONSES TO *AMIGAWORLD* REVIEWS

Wet Paint

This letter is a rebuttal and protest of the treatment of our program, Chroma Paint, mentioned in your article "A Case in Paint," by Gene Brawn (see Jan. '91, p. 26). Numerous product features were omitted from the chart accompanying the article. Chroma Paint's ANIM capabilities were completely ignored.

Many features and capabilities were not mentioned. For example, there was no reference to auto configure pix, which sets the display to the new picture's resolution. Chroma Paint supports any screen resolution that is displayable, as well as superbitmap. It includes the following tools: pattern spray, continuous and filled freehand, outlined and filled circle, shape fill, and keep aspect ratio. It also has the following brush tools: freehand, smooth, half, and double. Drawing Modes included are replace, OR, XOR, and mix. Further, swap is missing from the palette chart, and the number of color cycle ranges is six, not one.

Animation capabilities not mentioned include method, page flip, ANIM, save range of frames, playback, append, step forwards/reverse, frames, insert, delete, range, copy, and swap. File formats omitted are ANIM and load/save at x/y.

Wendy Ernstrom
Designing Minds

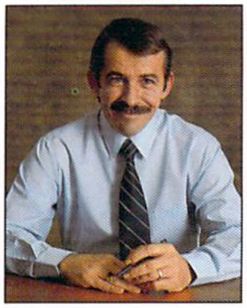
While I did miss the fill function (although it is in a rather odd place), some of the functions outlined above are two-tool functions, whereby a combination of functions produces these effects. Other paint programs have these capabilities, but they were not mentioned, either. There is no circle function per se; you must make a circle from an ellipse. As for the animation capabilities, these were available only with a separate module. Space and time constraints compelled a decision to cover main programs only. Deluxe PhotoLab and DigiPaint modules were omitted, as well.

Gene Brawn

Yakkity yak. . . *do* talk back! Send your comments on reviews to Back Talk, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■



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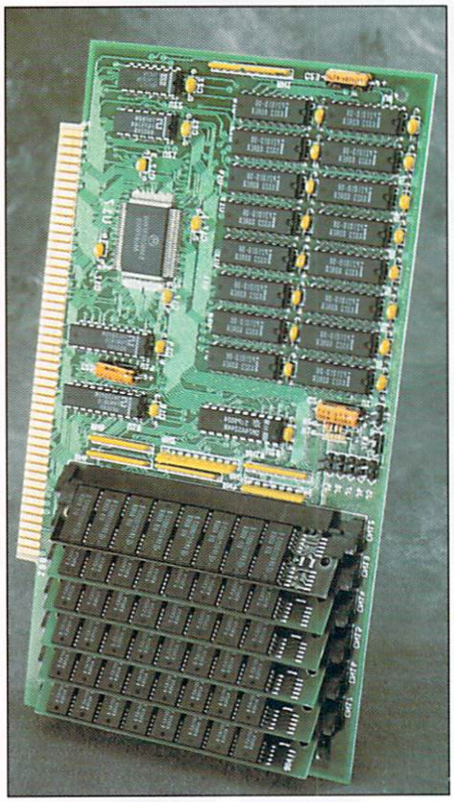
Compiled by John Wolfskill

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GVP SHIPS SERIES II RAM BOARD

Great Valley Products recently unveiled the **Series II RAM card**($249) for all Amiga 2000/2500 owners. The 8MB card comes standard with 2MB of autoconfig memory on board. It also supports a 6MB configuration for A2000 owners who want to get the most from Commodore's A2088/2286 bridgeboard. The Series II RAM board is available through GVP dealers. (Great Valley Products, 600 Clark Ave., King of Prussia, PA 19406, 215/337-8770.) *RS# 504.*



GVP's Series II RAM board provides up to 8MB of RAM expansion for Amiga 2000/2500 owners.

ART DEPARTMENT PROFESSIONAL SHIPS

ASDG recently pulled the wraps from its long-awaited **Art Department Professional** ($240) image-processing and manipulation system. The full-featured program is a superset of **The Art Department**. ADP supports compositing of graphic elements into 24-bit (16.7-million-color) images, provides ARexx control, and lets you perform hundreds of image-processing operations.

Loader and saver modules allow you to convert from a variety of Amiga and non-Amiga image file formats. You can also control image-processing hardware devices such as MicroIllusion's Transport Controller. ADP's palette control features include editing, lock-in, and the ability to load and save palette combinations. Other features include 208 Amiga rendering/video modes, six dithering methods, and more. Current TAD users can upgrade to the new package for $130. (ASDG, 925 Stewart St., Madison, WI 53713, 608/273-6585.) *RS# 503.*

AND THEN SOME

BLUE RIBBON SOUNDWORKS has now slashed the price of its best-selling **Bars & Pipes** music software for all Amigas. The package, which previously sold for $299, now sells for $199. According to the company, the price reduction gives all entry-level users and hobbyists the opportunity to explore Bars & Pipes' object-oriented approach to music composition. The price reduction is concurrent with the release of **Bars & Pipes Professional** ($379). Registered Bars & Pipes users can upgrade to the new package for $99. (Blue Ribbon SoundWorks, 1293 Briardale NE, Atlanta, GA 30306, 404/377-1514.) *RS# 505.*

For AmigaVision users who want to add sound effects to their multimedia projects, Commodore offers **Amiga Clips, Volume 1: Sound Effects** ($29.95). You can also use the two-floppy-disk set of 50 different digitized sound files as audio feedback for key presses or mouse clicks. Sound categories include animals, autos, bells and whistles, clocks, drinks, humans, phones, voice, and weather. The sound files are compatible with all Amiga programs that support the 8SVX sound for- ►

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mat. (Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380, 215/431-9100.) *RS# 506.*

Now you can literally place yourself inside your videos with **ChromaKey/Switcher** ($395). The hardware add-on allows you to achieve sophisticated video-mixing effects or place live video over Amiga graphics (the opposite effect of a genlock). It requires an external genlock encoder. (MicroSearch, 9896 Southwest Freeway, Houston, TX 77074, 713/988-2818.) *RS# 507.*

Help has arrived for budding PageStream 2.1 users. Help Disk now offers **The Buddy System for PageStream** ($49.95). You activate this on-line tutorial when you press a key, enabling you to see and hear help information instead of the intended PageStream program function. Help includes an audio narration or a more detailed audio-video demonstration that helps you over the rough spots like a live instructor. **The Buddy System for DeluxePaint III** ($49.95) is also available. (Help Disk, 6671 West Indiantown Road, Suite 56360, Jupiter, FL 33458, 407/694-1756.) *RS# 508.*

Speaking of PageStream 2.1, Soft-Logik now offers desktop publishers a new line of add-on fonts. You can use the **PageStream Plus Pack** ($75) fonts along with those already available with the program. Font styles include Helvetica, Helvetica Narrow, Avant Garde, Chancery, Times, Bookman, Palantino, Schoolbook, and more. **Font Pack 1** ($75) comes with a variety of font styles, including Spokane, Thames, Elegance, Roman Bookface, Westside, Circus, and many more. A disk containing only the Postscript printer version of the fonts is available for $39.95. (Soft-Logik, 11131 South Towne Square, Suite F, St. Louis, MO 63123, 314/894-8608.) *RS# 509.*

Mindware International recently announced updates to three products. **Digimate III Version 1.1** ($39.95) extends its animation capabilities to work with NewTek's DigiPaint 3 paint program. Also new is a dynamic video cross-fade effect you can use with HAM images. **3D Animator Text Version 1.2** ($49.95) sports an accelerated version of the program, and Mindware throws in an extra font set free of charge. A major revamp of **Credit Text Scroller Version 2.2** ($49.95) includes scrolling text displays, and a text "crawl" feature that provides news-interrupt style displays, subtitling, and more. (Mindware International,110 Dunlop St. W, Box 22158, Barrie, Ont., Canada L4M 5R3, 705/737-5998.) *RS# 510.*

Want to learn the fine points of DeluxePaint III and other graphics-related Amiga products? Then take a look at Michael Brown's two-hour video-tape tutorial **VidZeen Volume 1** ($14). This gem is filled with tips, tricks and hints that reveal the secrets the pros use to create dazzling graphics and special effects using DeluxePaint III. (MBZ Products, 6023 Kilgore Ave., Muncie, IN 47304, 800/752-5078.) *RS# 511.*

As long as you've got your VCR fired up, here's another video worth a look. **DTV.101** ($49.95) is an instructional tape that guides your first desktop video project from concept to completed program using a step-by-step approach. Subjects include system planning, computer-software and video-equipment selection, system configuration, electronic editing, and more. (BullsEye Publishing Co., Buffalo Theater Bldg., Spring St., Jasper, AR 72641, 501/365-3055.) *RS# 512.*

So what's a toaster without some bread and butter? If you're a Toaster owner in search of fonts to feed its character generator, you'll find them available from Shereff Systems. **Bread & Butter** ($119.95) is a new font package designed specifically for NewTek's Video Toaster. The package comes on three disks and includes 17 anti-aliased font styles available in 26, 38, 50, and 66 scan-line sizes. If you don't own a Toaster, try **VIDEO FONTS II** ($119.95), a package of anti-aliased Amiga fonts for programs that accept the ColorText font structure. The set provides 17 font styles in four sizes. (Shereff Systems, 15075 SW Koll Parkway, Suite G, Beaverton, OR 97006, 503/626-2022.) *RS# 513.*

. . .PLUS GAMES GALORE

Wolfpack ($54.95) is a realistic simulation of World War II naval warfare. As the skipper of an allied escort ship, you match wits with cunning German U-boat commanders. If you get too good at blasting subs, you can switch roles and become a U-boat commander. The simulation comes with 12 built-in scenarios, plus a construction set you can use to create original games. (Broderbund Software, 17 Paul Drive, San Rafael, CA 94903, 800/521-6263.) *RS# 514.*

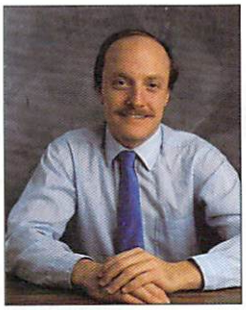
The Death Adder is tyrannizing the people of Yuria. Too bad only a few of your heroes have the moxie to stop this ruthless tyrant. You must choose which hero to send into the path of the dreaded Death Adder. This guy plays hardball with razor sharp swords and curtains of fire. The desktop version of the arcade game **Golden Axe** ($49.95) is now available for all Amigas. (Electronic Arts, 1810 Gateway Drive, San Mateo, CA 94404, 800/245-4525.) *RS# 515.*

Pre-release critics say **Overlord** ($49.95) is the first computer game to take science fiction seriously. It's a strategy simulation of galactic proportions, with a scenario that allows you to set up and develop an entire universe. Elements include terraforming, population manipulation, and war stategy. (Virgin Mastertronic, 18001 Cowan, Suite A, Irvine, CA 92717, 714/833-8710.) *RS# 516.*

Jack Nicklaus Presents The Great Courses of the US Open ($21.95) is the fourth in a series of add-on course disks for the Jack Nicklaus' Unlimited Golf & Course Design and Greatest 18 Holes of Major Championship Golf game titles. The disk contains three popular U.S. Open courses, including Pebble Beach, Oakmont, and Baltusrol. (Accolade, 550 S. Winchester Blvd., San Jose, CA 95128, 800/245-7744.) *RS# 517.*

Magic Canyon Theme Park was a popular tourist attraction that now stands deserted. No customers. No staff. There's something strange going on there. In **Theme Park** ($49.95), it's your job to solve the mystery as you carom through four theme-park lands collecting tokens and clues. Ride the Monorail of Fear, play the slot machines in Dragonland, or take a spin on the hair-raising rollercrepper. (Konami, 900 Deerfield Parkway, Buffalo Grove, IL 60089, 708/215-5100.) *RS# 518.* ■

THE PD PROSPECTOR



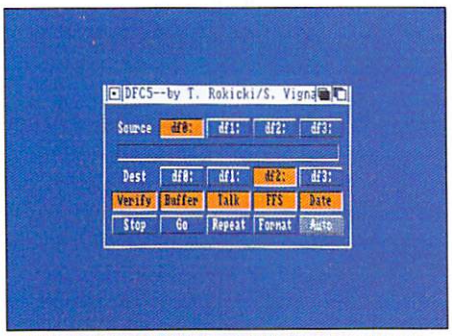
This month, an in-depth look at one top download from each of the networks.

Compiled by Tim Walsh

CompuServe

DFC5.LZH (AmigaUser, Library 9). The opening line of the documentation for DFC5 summarizes this program well: ". . .a new, exciting, general-purpose disk copier and formatter." An upgrade to the revered disk utility, DFC4, the deceptively small (11.5K) DFC5—written by Tom Rokicki and Sebastiano Vigna—is a must-have for serious Amiga users.

And what sets this public-domain program apart from, say, using the Workbench or the Shell for disk formatting or copying? First, it's noticeably faster, and, more important, it offers a switchable 880K RAM buffer, which also mandates the use of at least one meg of RAM. Provisions also include multi-pass, as opposed to single-pass, copies, should you use DFC5 on a 512K Amiga.

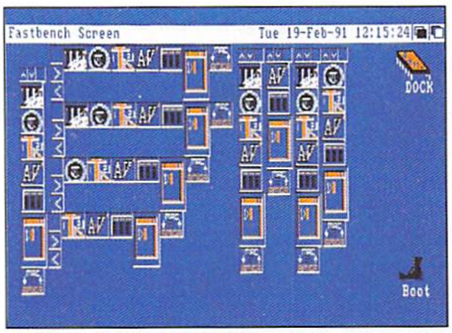


DFC5, by Tom Rokicki and Sebastiano Vigna.

Bells and whistles include such things as an FFS (Fast File System) option for formatting, a Talk option for chanting the program status, and Verify and Date options that can be toggled on and off "on the fly." The small size of the program makes it unobtrusive, it multitasks flawlessly, and it offers AmigaDOS 2.0 support. The authors' generosity in releasing such high quality software to the public domain should be commended. Thanks, guys!

GEnie

AMIDOCK.LZH (Library 4, File #10424). AmiDock version 1.2.4 is a 63000-byte file by Gary Knight that's well worth both the download time and the $25.00 shareware fee. The beauty of AmiDock is that by carefully adjusting your Workbench's palette, you can create a near-replica of the NeXT computer's operating system's interface, both in appearance and functionality.



AmiDock, by Gary Knight.

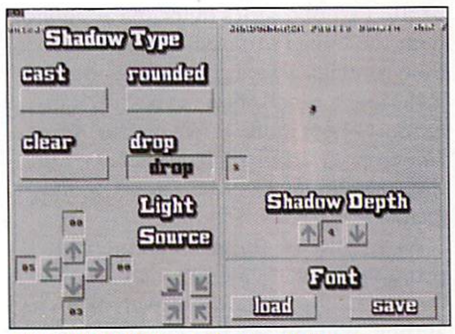
Beyond inciting envy in NeXT users, AmiDock allows you to replace disk icons on your Workbench screen with buttons to launch any program with just a single press of the mouse button. The "dock" of buttons can be arranged in a horizontal or vertical format, beginning in the upper-right corner of the screen. These buttons can be scrolled and moved as a group, and multiple groups are easily placed around the screen. Priority is given to these buttons, so that they'll "overlay" other windows as the topmost layer of the screen.

The buttons used by AmiDock are IFF brushes, so editing them using the paint program of your choice is no problem. Also available is DOCKBRUSHES1.LZH (Library 14, File #10474), which adds predefined brushes to your Dock. DOCKGRID.LZH (Library 4, File #10425) adds more icons for use with a hi-res dock.

People/Link

SHADOWMAKER15.LZH (AmigaZone Section 9, File #26885). Version 1.5 of the popular SHADOWMAKER program is a working demo of the commercial program ($19.99). It rapidly creates user-defined drop shadows for font files, and it also supports ColorFonts.

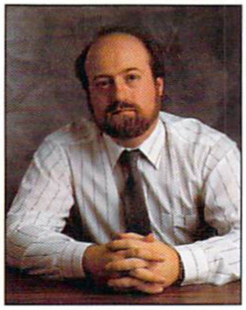
Created for all Amiga enthusiasts by Stephen Lebans at L & V Productions, SHADOWMAKER is easy to learn to use. Once the program is activated, a file requester appears, with the listed default directory being the font drawer on your Workbench. Load in a font file, and the letter S appears with a default shadow.



SHADOWMAKER, by Stephen Lebans.

Using the screen buttons, you can adjust the direction of the light source for shadows, select from three types of shadows, and adjust each shadow's depth. The effects range from subtle to wildly dynamic. When you're satisfied with the appearance, activating the Save option assigns these attributes to each character in the font.

Because it's a demo program and not the real thing, this version of SHADOWMAKER supports fonts only up to 39 points in size. Obviously, L & V Productions have a useful product to tout, and this demo proves that good software really needn't be expensive. ■



HELP KEY

Don't despair and pull out your hair, for Lou always has an idea to share.

By Louis R. Wallace

IFF AND AREXX

Q: *I need programming information on the IFF standards for the Amiga, but haven't been able to find any reliable source. Also, I keep reading about software that offers ARexx interface support, but I can't find a programmer's explanation of ARexx.*

M. Neil
Littleton, Colorado

A: You should get the *Amiga ROM Kernal Reference Manual: Includes & AutoDocs* ($32.95, Addison-Wesley Publishing Co., Route 128, Reading, MA 01867, 617/944-3700). Part of a series of technical publications for Amiga programmers, this volume contains a wealth of information, including a description of the IFF standards. Others in the series are the *Amiga Hardware Reference Manual* ($24.95) and the *Amiga ROM Kernal Reference Manual: Libraries & Devices* ($34.95).

As for ARexx, this is a commercial program ($49.95) available for users of the 1.3 OS by ordering directly from its author, William Hawes, PO Box 308, Maynard, MA 01754. ARexx is built into version 2.0 of the operating system.

CHIPPED AWAY

Q: *I have an A500 with two disk drives, and about a year ago I had the A501 512K memory card installed to bring my total memory to one megabyte. Several months ago I had a service center install the Super Agnus chip to increase the amount of chip memory. Since I had it installed, the memory-free message at the top of Workbench shows about 960,000 bytes of free memory, which is what I expect with a megabyte.*

When I load a program and use its memory-info options (like the About option in DPaint), it tells me I have no fast memory available and varying amounts (depending on the program) of chip memory! Then DPaint won't let me animate any longer (because it thinks I don't have any fast RAM), and even low-memory programs like Utility Master tell me I have lots of chip memory but no fast memory. All this suggests to me that the service center did something wrong when they installed the Super Agnus chip. They tell me they installed it correctly, but the fact is that now I have no fast RAM and am out good money! Can you tell me what's wrong?

B. Horton
Hattiesburg, Mississippi

A: From your description, it sounds as though everything is working just as it should. Think about what happened when you upgraded with the Super Agnus chip. This upgrade lets the Amiga access more then 512K of chip memory, increasing it another 512K, for a total of one megabyte. When this occurs, the memory on your A501 card, which had been treated by the computer as fast memory, becomes chip memory. Because that's all the extra memory you have on your system, the net effect is that you really no longer have any fast memory. You will have to add more memory to the A500 to gain true fast memory. So the software you are using is correctly reporting the amount of chip and fast memory present in your system. This lack of fast memory is why DPaint III won't let you animate. Once you add more memory to your computer, this feature will be available again.

RAYS ON THE BAY

Q: *I have a one-meg A500 and two drives. I am thinking of upgrading my system with a Bodega Bay and four megabytes of memory to do some in-depth ray tracing and animation. I understand that ray tracing is a complex process that can require many hours of computer time, and my concern is that this might severely reduce the amount of time that my wife can use the system for writing. Could we effectively multitask the ray-tracing program with a word processor such as ProWrite and still get acceptable performance? Or will this require us to add a CPU and math coprocessor upgrade?*

T. Ramsey
Nova Scotia, Canada

A: You are right: The first thing you need to get for ray tracing is more memory. As far as I can tell, the Bodega Bay is a good upgrade path for the A500. More memory will allow you to create and ray trace more complex scenes. It also allows you more flexibility for multitasking.

You have hit the nail on the head with your concern about ray tracing requiring long periods of computer time; it certainly does. It's also a very CPU-intensive process, and you'll find that multitasking a ray-tracing program and a word processor on an A500 will have a serious impact on how well the word processor performs. If you do plan on doing both, you really should consider getting an accelerator, which will vastly improve the computer's performance in just about every multitasking situation. My Amiga is accelerated, and I often word process (and telecommunicate) effectively while ray tracing in the background.

If you do plan on using one of the 3-D ray-tracing packages with a graphic word processor such as ProWrite, you must also consider chip RAM. When multitasking several graphic-intensive applications, it is very easy to run out of chip RAM on such machines as the A500, which currently has only 512K of memory for its custom chips. This can occur in spite of having multiple megabytes of memory. ■

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We are the **Offical Public Domain Library of Antic Amiga Plus**, we have been the **Offical PD library of Amiga World.** Find out why these magazines choose us! Each of our disks are jam packed with only the best programs. The first two letters on each disk indicate the orientation of the disk; DD# intermediate to advanced - often contains source, WB# general interest - most programs can be run from the workbench, and FD# games and entertainment. Order our disk based catalog and receive a coupon for a **complimentry** volume with your next purchase. We always use only SONY disks!

Featured Disk

WB41: Music - MED an incredibly well done, full featured music editor. Create your own stunning music directly on your the Amiga. Similar to SoundTracker but better. Very powerful easy to use program.

New Disks

FD53: Great Arcade - On this disk is a wonderful implementation of the ever popular classic arcade game Defender. Also contain Air Race a WWII flying ace arcade game, and Psycoblast new creation idea game.
FD54: FoodFight - Contains Galactic FoodFight, a wacky spaced out arcade game loaded with shooting ketchup, and hamburger eating monsters, and flying pizzas.
WB83: Computer Art - this disk has some of the best Amiga generated computer art that we have collected in the past 5 years.
WB84: General Enjoyment - A fun filled disk that contains, I-Ching the ancient chinese art of fortune telling, FastLife an extremely fast life implementation, and several "Schwabie" type hacks that are loads of fun to watch. A very delightful disk, recommended.
WB85: Graphics - Contains several programs for manipulating 24 Bit color images (ham-e) and a rather nice Iff Image processing package.
WB86: Amiga Vision - Contains the Centurion Press, An Amiga newspaper by Lou Wallace.
DD77: Fortran - Contains a full featured FORTRAN77 environmental development system. Also contains EzAsm a strongly macro dependent 68000 assembler.
DD78: Menus & System Enhancements - Several neat programs to aid in launching programs from special icons (Next computer style), adding WorkBench menus and more. Also contains many useful programs to determine operation system configuration, memory usage, load and many other important utilizations.

Other Gread Disks!
FD5: Tactical Games - BullRun - a Civil war battle game, Metro - you play the role of a city planner. Build wisely and your system will be a success, but poor planning will lead to disaster and financial ruin. Very very habit forming.
FD6: GAMES! - This disk is chock full of games including; Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addicting, and SpaceWar - Best described as a cross between Combat-Tanks and asteroids.
FD7: PACMAN - This disk contains several pacman type games including; PacMan87, MazMan and Zonix.
FD9: Moria -. This has great graphic controls, multiple spells, similar to Larn and Hack. Play time several weeks!
FD10: HackLite - A dungeon adventure game. Considered a must-have classic. This is the second release of this game on the Amiga. Great Amiga graphic interface. Play time several weeks!
FD11: Las Vegas and Card Games - Las Vegas Craps - The best Las Vegas Craps simulation every written for any computer. Contains extensive HELP features, Also Thirty-One,VideoPoker and more.-
FD12A,FD12B: Star Trek, The Game - This is by far the best Star Trek game ever written for any computer. It features mouse control, good graphics, digitized sound effects and great gameplay. Counts as 2 disks. Req. 1Mb and two drives (or hd).
FD13: Board Games - contains multiplayer Monopoly, Dominoes, Paranoids, and others.
FD14: Dungeon Master Hints and Arcade Games - DM maps, spells, item location, and hints and more, also on this disk, Hball - an arkanoid/breakout type game, Trix - a Qix type clone.
FD16: Strategy Games - Includes Diplomacy and Empros, both great conquer and rule multiplayer games similar in concept to Simcity and Populace. Also includes blackbox, hearts, and others.
FD17: Educational Games - This disk includes several games for the younger members including geography, math, science, and word games, also includes Wheel of Fortune.
FD20: Tactical Games - MechForce(3.72); A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim.
FD22: Arcade Games - This disk has MoonBase - The best lunar lander game we have seen in a long time, very challenging Also BoingGame - a maze type, donkey kong type game.
FD24:Strategy Games and Others - Includes Dicey, a yatzee type clone, MM a master mind type clone, Flipper an othello type clone, China an great implementation of Shangi, CircutWars a challenging game based on electronics, and Etrain a computer based model train set construction set for the enthusiast.
FD26:Arcade Games - Marble_slide, this is a truly commercial quality game. Similar to a Lucas game named PipeDreams, excellent playablitly and entertainment, Mutants , a small version of the arcade game of the same name, also SuperBreakout a pong/arkanoids type game.
FD27: Arcade Games - This disk is loaded with some great games. Includes, Raceorama a great racing car game with ten different courses, MiniBlast a helicopter gunship type clone, Shark in the same class as froger, and SBreakout the original breakout with more.
FD29: Shoot'em up's - WWII - you're the pilot of a WWII plane flying through enemy territory, you've just been spotted, good luck on you mission, SpKiller - try and penetrate enemy lines with this game, and Retaliator - another great game.
FD31: Games! - Air Traffic Control - a good ATC simulation game, Black Jack Lab - a full featured set of card games, ChessTel - play chess with your friend in distant and remote places with this game and a modem, labyrnth - a well done text adventure game (like an infocom game), and MouseTrap - a 3d maze game.
FD32:Flight Simulator - Includes an instrument flight simulator for a DC10.
FD33: Arcade Games - Ffreddy a mario brothers type of game, Gerbils a target practice game, PipeLine a German interpretation of Pipe Dreams, Tron a light cycles version, and wetroids a wonderful version of asteroids with a hilarious twist.
FD34: Games - Includes WellTrix a derivative of the addictive game of tetris, and new version of BackGammon. Also included are several new "Schwabie type Hacks".
FD35 Omega (v 1.3) - A new outstanding dungeon and outdoors adventure game in a similar vain as hack, rouge, and moria. This version is considerably faster and better that all previous versions. Play time several weeks or months.
FD36:Games - Including Euchre- a wonderful card game, HeadGame - a sort of headless (ha) shoot'em up, Simpson - a shoot'em up loosely based on the tv show, Streets&Alleys - a good solitary card game, taxman - an math educational game.
FD37a & b:Tactical Games - Empire (2.2w) This great game comes highly recommended. With a full-featured graphic front end.
FD38:Games - Cribbage Master - A great cribbage game and tutor, Spades - a well done card came, ChineseCheckers - A computer version of this classic, Puzz - a slide piece puzzle game and construction set.
FD39a & b:Tobias Star Trek - This is a new, completely different version of Star Trek than that found on FD12. This one was created by the German author Tobias. Now with English instructions. Very Excellent!!! Counts as two disks. Requires 512k memory, a 500, 2000 or Pal.
FD40:Arcade - MiddleEast - a timely arcade game of death and destruction set in Iraq, BackToTheFutureII - a very playable demo version of this soon to be released commercial game, City - a missile command clone.
FD41:Games - Includes Capital Gains - a stock market game, Ball a Arknoids type of clone with many great twists, and Desert Shield - a shoot'em up with a destroy and conquer theme.
FD42:Games - Includes SpaceWar3 - a remake of this original Amiga classic, Trippin - a fascinating board game of intrigue, strategy, and player manipulation, Dominion - an engrossing strategy game of galactic war and conquest, Frog - a frogger type clone, and Mines - a very challenging strategy board game.
FD44: Game - Mechfight is an out of this world role-playing adventure comparable to hack and moria. The setting, interplanetary colonies and space stations. In your quest to explore the world, take time out to liberate bad guys of their most valuable possessions, engage in a mortal combat or two against robots and alien life forms, pick up a new amiga 9000. Most of all, don't forget to stay alive...
FD45: Arcade - Three good shoot'em ups. Batman - save the city from the Joker, DriveWar - gangsters are moving in on your territory, stop them at all costs, Web - a spidery, buggy affair of eat or be eaten.
FD46: Adventure Game and Trek Trivia - Contains a well done graphic adventure game, loaded with lots of interesting puzzles and challenges, similar in concept to Larn and hack. Also contains Trek Trivia, an outstanding, and very challenging set of StarTrek trivia questions.
FD47: Arcade Games - Contains DownHill - a demanding computer slalom ski game, MicroPac - a Workbench mini-pacman game, CrackOut - a break out clone, Jet - a superb aerial dogfight game, AmegaRace - an interesting asteroids type of game, and WindyDay - a unique arcade shoot'em up.
FD48: Puzzles - Contains CWP - a very well done full featured cross word puzzle game and generator, Concentration - like the card game, Hollywood trivia - a very large set of trivia questions on topics including StarTrek tng, HitchHiker's Guide, Indian Jones, StarsWars, MASH, and more.
FD49:Chaos Cheats - This disk contains an everything you wanted to know about cheat set for Chaos Strikes Back, including full maps, spells, object locations, super characters and more.
FD50: Submarine Game - Sealance, one and a half years in the making, this is an outstanding submarine tactical game. Commercial quality, highly recommended.
FD51: Games - DesertStorm a fast action arcade game, Amigatraion a well done concentration game, Chute a parachute jumping game, Running a dungeon adventure game similar to wanderer, and Solix a solitary card game.
FD52: Classics Games - PetersQuest a well done Mario brothers type of game, Jymbc a two player missile command clone, and Vstank a tank commander game.
WB2: General Interest - contains, Galaxy a program that represents the collision of two galaxies, Larn - an adventure/action game similar in concept to rogue or hack, but with a much different feel. Try it, you'll like it!, StarChart - a program that lets you display and identify about 600 stars, galaxies and nebulae visible in the Northern hemisphere.
WB4:Telecommunnication - This disk contains several excellent pd communication programs designed to get you on line quickly and easily, Access (1.42) - A very nice ANSI term program based on Comm v1.34, but with the addition of transfer protocols, Comm (1.34) - Last version of one of the best public domain communications programs ever made on the Amiga, Handshake (2.12a) Handshake is a Full featured VT52/100/102/220
WB5 - Fonts #1- Several fonts (35) for the Amiga, also included are five PageStream fonts,and ShowFont - a font display program.
WB6: Video Fonts #2 - ShowFont(4.0) This program allows you to quickly and painlessly view all 256 characters in a typical font. Large AmigaDos system fonts (many up to 56pts).
WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, watches, tools, US and State maps, and more.
WB9:Icons - Truly a multitude of various types and kinds. Also includes IconMiester, IconLab, and others great utilities to help generate icons.
WB10:Virus Killers - The latest and best VirusX(4.0), Kv(2.1), and ZeroVirus(1.3).
WB11: Business - Clerk(4.0), finally a full featured business accounting PD program for the small to medium company. Includes receivables, payables, end of month and much much more.
WB12: Disk Utilities - This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery archive and organizing, and all sorts off file minipulation. A real must have!
WB13: Printer Drivers and Generator - over 70 different drivers, and if these don't do it, with PrtDrvGen you can make your own.
WB14: Video- on this disk are several utilities for the video enthusiast. We have included multiple slates, video titling, Bars and Tone, Gray Scale, Screen fades and swipes, Interlace toggles, and SMPTE Calculators .Also on this disk is a full featured video cataloging program.
WB15: Business - This disk contains a spreadsheet, a database, a project/time management program and financial analysis (stocks).
WB16: Business - This disk contains an inventory manager, a loan analysis program, a great calendar/schedular, a rolodex program, and pennywise a good "Cash Book" accounting for home or office.
WB17: General Utilities - Includes several interesting programs, DiskX - Great disk sector editor, Snap - Cut and paste text between different windows, , also on this disk - calendar .generator, diet program, workbench scrolling text, and a scale convertor.
WB18: Word/Text Processors - This disk contains the best editors. Includes,TextPlus (v2.2e) a full featured word processor, Dme(v1.35) a great programmers editor with strong macro features,TexED(v2.8) an enhanced Emacs type editor, and a spell checker.
WB20: General Interest - DiskSalv V1.42 a disk recovery program for all Amiga file systems, FixDisk V1.0 another file recovery program with features DiskSalv doesn't have, 3DLookt gives a 3D appearance to your WorkBench, Clean V1.01 a program to de-fragment memory, Tracer - trace any part of an image.
WB22: Fonts #3 - Several more great fonts. These, like the other font disks work great with Dpaint and WYSIWYG word processors.
WB23: Graphics and Plotting - Plot (20b) a three dimensional mathematical function plotter. Can plot any user defined function, BezSurf2 - produce awesome pictures of objects one could turn on a lathe. Can also map iff image files onto any surface that it can draw. Now compatible with most 3D packages, and VScreen - makes a virtual screen anywhere, great for DTP .
WB24:Animation and Paint - On this disk, DA a complete commercial quality cell orientated animation package. Movie an "ANIM" player
for standard animation. QuickFlix an IFF slide show and cell animation program. Also on this disk are two PD paint programs of good quality.
WB25:Educational - On this disk are two programs that can generate maps of differing types, World Data Base uses the CIA's data base to generate detailed maps of any entered user global coordinates. Also Paradox a great demonstration of Albert Einstein General Theory of Relativity.
WB26: Disk Utilities #2 - MrBackup, KwickBackup - two well done utilities to help with harddisk and floppy disk backups, FileMast - a binary file editor, Labelprinter - Disk label printer with very powerful features.
WB27: Nagel - 26 Patrick Nagel pictures of beautiful women.
WB29: Graphics and Sound - This disk has several different Mandelbrot type programs for generating stunning graphics. Includes, MandelMountains - a realistic terrain generator, Fracgen - generated recursive fractals from user input, Mandelbrot and Tmandel - two fast mandelbrot generators, also Mostra - the best IFF display program to date, will display ALL IFF's including Dynamic HAM, and Sound - a great IFF sound player, will play anything. Try this disk, you'll love it!
WB33:Circuit Board Design - several terrific routines for the electronic enthusiast, Including PCBtool - a circuit board design tool, LogicLab - circuit logic tester, and Mcad (1.26) a well done new release of this PD CAD program, now comes with predrawn common circuit components for insertion into schematics.
WB34: Utilities - Several well done utilities, some will require moderate knowledge of a CLI or Shell for setup, Chatter Box - this one will play any user defined sound after any event (ie. disk

insert, mouse click, disk removal...), I once saw a person have this program play MR. Spoc's saying "Illogical Illogical" when a non-dos disk was inserted, Artm - The Amiga real time monitor, gives you full control of the Amiga OS, very powerful program, Helper - help program to make learning the CLI easier, PopMenus - for those of you with mouse accelerator programs, this one brings the pull down menus to the mouse, setfont - a working version that changes the system font to user specified font, and many more!

WB35: 3d Graphics - This disk contains several neat programs to use with your 3d modeling/raytracing programs 3dFonts - Full vector font set for use with 3d programs, FontMaker - make 3d fonts from any system font, Make3DShape - create 3d shapes from any image, DumptoIFF - create 3d animations preserves pallet, and World3d - a demo program of a front end for use with DKBRender.

WB36: Graphics - On this disk are several programs to create stunning graphical images including, MPath - creates swirling galaxy images, Roses - produce an unlimited number of variations of images that a symmetrically similar to a rose, SimGen - display those spectacular images as part of your workbenck screen, and RayShade - a very good raytracing program, create your own beautiful 3d graphics.

Wb37: Educational - Educational games and puzzles that cover math, geography, spelling, and books. Ages 6 - 15

WB38: Plotting and Graphics - Plotxy is the most powerful full featured plotting package. Used by many colleges and universities. A welcome addition to our library! Highly recommended. Plans - a incredibly well done Computer Aided Drafting program, very full featured. Tesselator - a program that helps generates fantastic looking, recursive M.C. Ecsher type pictures.

WB39: Music - Intuitracker is an German offer of an exquisitely well done program that allows you to play music on your Amiga with CD like controls. Lets you strip out music from your favorite games or others and include them in your music library.

WB40: Music - "CD on a disk", 90 minutes of modern music on this well presented collection.

WB43:Business - This disk contains AnalytiCalc - probably the most powerful spreadsheet program on the Amiga. A full featured spreadsheet with many features expected in a commercial package. Requires 1.2 MB of memory!

WB46:Clip Art - HighRes clip art with the following motifs - embellishments (borders, dodads ,...), people, and transportation.

WB48: Clip Art - HighRes clip art with the following motifs - Holidays, music, medical, and misc.

WB49abc:Animation Sampler - On this three disk sampler set (counts as two disks) are some of the best animations that have been created over the last three years. Several examples of "Movie" type animations some with spectacular raytraced reality (coolroby, watch, spigot and egg). Also several european style or "Demo" animation with incredible graphics and outstanding electronic music (akrilight, copersine, doc, dps2010, impact, and logodemo). These truly show off the creative edge of an Amiga!

WB50: Animation - Seven of the best european style animations or "Demos", including - scientific 451, subway (a U.S. entrant, also our favorite), sunride, thrstdemo, tnight, waves, and woow.

WB51: Animation- On this disk are two excellent movie style animations including ShipRotation - a futuristic space ship orbiting a surrealistic world (one of the best), and RV-3 - a dpaintIII anim of a rather wacked out airplane.

WB53:Graphics- The disk contains C-light - The easiest to use raytracing we have seen to date. This one started out life as a full featured commercial product similar to Sculpt3d. Raytracing programs can generate stunning, realistically shaded objects. Also, sMovie - a full featured video text titler similar to ProVideo, Broadcast Titler. Great video scrolling, wipes, special effects, and more...

WB54:Printing - This disk contains several routines to help with the chore of printing. Includes Gothic - Finally a Banner printer for the PD! PrintStudio -a well implemented all-purpose printer-utility with a very comfortable graphic interface and many advanced features, Lila - with ease, print ASCII files to a PostScript printer, and many more.

WB55:Application - XCopyIII - a full featured disk copier, make backups of write protected disks. RoadRoute - find the quickest route from one city to another, highway description included, Diary - a diary program like "Dougy Howard M.D", Cal - a calendar program, Magman - a database tailored to maintain records on articles and publications.

WB57:Animation - This disk has several "Demo" style animations, Including, Blitter, Lolly, Sun5, vertigo, vortex, and xenmorph.

WB59:Business - contains a great, very full featured stock market technical analysis and tracking program, also an appointment calendar, and more.

WB61:Intermediate Utilities - Includes programs to help to drasticly decrease flicker in interlace and hi-res modes (antiflick), an Atari-st emulator, an eprom programer, turn your amiga into an eight channel digital data analyzer or oscilloscope, and more.

WB62:Midi Utilities - Several useful midi utilities including, programs to transfer to and from several music programs to midi, a midi sysex handler, a midi recorder with timebase, display midi info, file sequence player, and a few scores.

WB63:Disk Utilities #3 - Several highly recommended programs to aid in removing duplicate files from your hard drive, performing file backups, Binary editing, fast formatting, file recovery, disk track recovery, and forced DISK VALIDATION of corrupt disks.

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WB66:Icons #2- Lot's of neat icons. Also, several wonderful programs that to let you create your own icons, modify and manipulate icons and info structures.

WB68:Music Utilities - several good utilities for the Amiga music enthusiast. Includes, Noisetracker - a great music creation program, Sonix2MOD - converts sonix to .mod files which then can be used by noisetracker, soundtraker, and MED, SpeakerSim - a speaker design tool demo, Wondersound is an additive harmonic instrument design tool with a separate envelope design window and 16 relative harmonic strength and phase angle controls.

WB69: Music - This disk has over 90 minutes of classical and modern electronic music for you Amiga.

WB70:Desk Top Pub - Atcp - transfer Macintosh screen fonts, Mac or IBM format .AFM metric files, to Amiga screen fonts and PPage .metric files. With this program open door to the libraries of Adobe and PostScript type!, Calendar - month templates in PS form, Post - a full featured post script file display and print utility.

WB71:C64 Emulation - The A64 Package is a complete, very powerfull, Commodore 64 emulator.

WB73: KeyBoard Utilities and more - Dmouse - one of the most useful type programs available, contains an all in one, mouse excellarator, screen blanker, Shell evoker, Function key defines, and more, KeyMacro - set up macro definition for any keystroke combination, KeyMapED - remaps the key board display to any user definable character. Also Ntsc-Pal - converts any european (pal) or US (ntsc) to your standard, Pbar - window pull down bar paint program, and TPjr - a full featured video titler.

WB74: 3000 Utilities - several programs for the Amiga 3000 user. MachIII - our favorite mouse, hotkey, screen blanker, autoCLI and autopoint all in one program, Iconize - a 16 color icon editor, Blanker - starfield screen blanker, NoClick - stop drive clicking, ReMapIcon - covert 1.3 icons to 2.0, and more.

WB75: Music - over 100 instruments files (.inst) and sample sound files (.ss) for your music programs.

WB76: Applications - This disk contains Stickery - a often requested knitting design program, Lotto - a rather complete lottery tracking and prediction utility, SSS - this screen capture program can grab almost any screen including games, Today - a personal calender, Tarot - fortune teller, and Grammar - grammar checker.

WB77: AV_Demo - a well done Amiga Vision Demo program.

WB78: AV - On this disk are two Amiga Vision programs (bubbler, sync) written by Lou Wallace, chief technical editor of Amiga World. These programs are marvelous examples of how too's with AV.

WB79: Home & Business Accounting - Includes Ckbacct - the most complete checkbook accounting program going, LCDCalc - this well done calculator has a very large display and operates from the keyboard or mouse, Mileage master - monitor your automobile mileage with this mileage log, Grammar - a grammar checker, and Worldtime - find out what time it is in up to 50 global cities.

WB80:Graphics - Raytracing programs generate absolutely stunning realistic looking planes, rockets, buildings..., and surreal images often consisting of highly polish spheres and objects. 3-D Master is the most powerful EASY-TO-USE of it's kind we have seen to date. This is easily better, and more full featured, than similar commercial programs costing in the hundreds of dollars.

WB81: Great Applications - DataEasy a very easy to use, database program. Don't let the easy of use fool you, this is a very full featured database program including full printer control for address labels and mail merge applications. Also includes, TypeTut a good typing tutor, RLC a full featured label printer, Banner, a multi-font banner maker, and Budget a home accounting in a program. Highly recommended.

WB82:Animations - Four full length, well done "movie" style animations. Including, Coyote, JugglerII, GhostPool, and Mechanix. Two disk set, counts as one!

DD45: AREXX PROGRAMS - This disk contains several useful arexx programs and examples, PopCLI4 - The latest of a must have utility.

DD47: Pascal - This disk contains everything needed to program in Pascal. Includes, A68k (1.2) 68000 assembler, Blink linking software and PCQ (1.0) a modest Pascal sub-set compiler.

DD49: C Compiler - contains zc(1.01) fully K&R, zcc(1.0) front end, A68k(1.2) assembler, Blink linker.

DD50: ARexx #2 - a must have set of tutorials on ARexx and several useful examples and utilities for ARexx development.

DD51: Circuit Analysis - Aspice (2.3) A full featured program for electric circuit analysis.

DD52: Scientific - Includes Elements - an incredibly well done periodic table program with source, Scientific plotting - over 600k of Lattice C source routines that can be included in your own programs.

DD54: Compression - This disk is loaded with ALL of the best file compression programs and aids for the Amiga. Many of the programs can be used by the new user. Includes Arc(2.3), Lharc(1.0), Lhwarp(1.03), Pkax(1.0), PowerPacker(2.3a) a must have by all, Zip(1.0), Warp(2.04), and Zoo(2.0). Also IFFcrunch an excellent compression for IFF files.

DD55: ARP - On this disk you will find the complete ArpRel3.0 release including the full user docs, the full Developers guide, and Conman (1.4). ARP is the official AmigaDOS Resource Project (ARP) release 1.3. ARP makes many improvements to AmigaDOS and makes your system easier to use from the CLI.

DD57: Advanced Utilities - Msh - like Cross-dos, copies files to and from MS-DOS, Pal-NTSC - convert any pal program to NTSC and vice versa, Also several utilities that improve your startup-sequence, plus 25 more programs.

DD62: Basic and Xscheme - Cursor - a full featured Amiga Basic compiler, sbasic and ftext - several wonderful routines to help in basic programers, and Xscheme - an interpreted object oriented language.

DD63: Tests - With the soon to be released new version of workbench and the Amiga 3000, we though that releasing all of the classic speed tests and system checks would be in order. Includes but not limited to, CPU Speed, Sieve, Salvage, Speed, STU - a full featured system diagnostic tool, Memory integrity test, Disk integrity test, and a couple of graphic tests.

DD64 Amiga Programers Manual - The fully comprehensive Amiga programing manual with source code examples and easy to understand tutorials!

DD65 C Tutorials - Several well done tutorials on how to program the Amiga. Includes tutorials and working examples on Device drivers, IFF reads and writes, Sound implementation, Arcade game design and implementation, Double Buffering, and others. A must have for Amiga Programmers.

DD66 Programing ToolBox - Many programs to help in your development efforts (most for C some for basic) Includes programs to generate requesters, an incredible spritemaker toolbox, to greatly aid compiling, convert DPaint brushes to C structures, a great library manager, and many more wonderful time savers!

DD69:Advanced Utilities - SerNet and ParNet - Connect two Amiga's and share resources, MemMonitor - Similar to WFrag but greatly improved, Selector - put menus on your workbench screen, and more.

DD71:C compiler - This disk contains Dice, Matthew Dillon's full featured, powerful C compiler and environment system.

DD72:VT Emulators - Contains three powerful, full featured vt emulators, with many advanced features including kermit, xmodem and tektronix protocols. VaxTerm, VLT, and more.

DD74: Arexx examples/utilities #3 - several working examples and programs to aid the arexx user and programer.

DD75: Intermediate Utilities - ConMan (v1.3e) this very popular shell and cli replacement now also work on an A3000's, BinTape, MWTape - two scsi tape archivers, Password - system wide password protection, Woodward - displays any attempt to open any file or libraries (great for finding out why a program exits early). Also CliAnywhere, DosError, Eco, Executer, Gstart, Jmenu, Journalab, LockDevice, MadBlanker, and PS.

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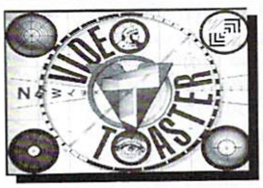
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EAR TO THE WALL

Great Volumes of Products. Great Valley Products is getting a mite prolific lately, now that it is marketing European products such as SCALA presentation software as well as its own product development. Also on tap are the $1995 Professional Video Adapter (PVA), a 24-bit board that comes bundled with Caligary and has a genlock, digitizer, frame grabber, frame buffer, and de-interlacer.

Also cooking at GVP is a voice-mail product, a high-density floppy drive, and, of course, cheaper, better, and faster accelerators.

And while we're on the subject, the GVPers claim that their 50MHz 030 card is faster than a standard 040. When we get them both in, maybe we'll put them to the test.

Now we're talking. In the PC world, database users are beginning to connect to a new breed of multiuser databases that are based on the SQL data-access and manipulation language. Amiga users may get the same capability in rumored but unreleased versions of Superbase.

Diamond in the rough? Our spies report that Howard Diamond, former education chief at Commodore, has left, with his responsibilities absorbed by Unix Manager Paul Calkin.

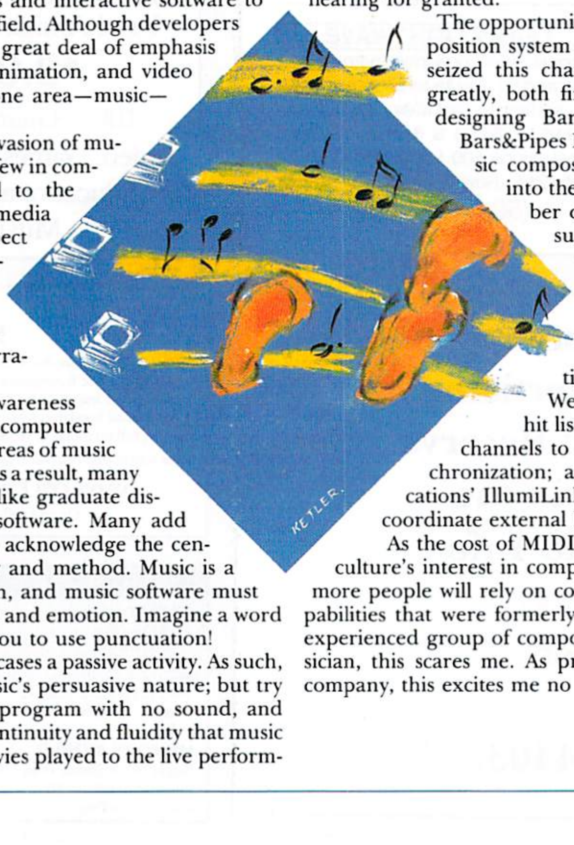
Sony balony? We've heard some thoroughly unsubstantiated talk about Sony's angling to buy Commodore. This is plenty doubtful, but the recent InfoComm show saw Sony reps buzzing around the Amiga like flies on a buffalo. Who knows what this portends, but *something* is bound to happen.

Party crasher. Verbum Magazine, which used to be a Mac-oriented mag for electronic artist types, held its annual party at the recent Macworld Expo. In addition to thousands of guests, the increasingly credible Amiga crashed the gates and dominated the field. In addition to Mandala and the Toaster running non-stop, German Amiga artist Brumbaer displayed his digital wares. Verbum Editor Mike Gosney reports that "The Mac people were in awe."

Egg and toast on their faces. At Apple's yearly R&D shindig last January, the firm pulled out all the stops with a wild and wooly display of video wizardry. Think we're scared? Not quite, since our spies spotted the carefully obscured A2500 with a Toaster that was doing the video honors.

SOAP BOX

MULTIMEDIA DEVELOPMENT HAS grown from a notion in the 80s to a reality in the 90s. Companies across the nation are creating authoring systems and interactive software to accommodate this burgeoning field. Although developers large and small have placed a great deal of emphasis on the creation of graphics, animation, and video applications for multimedia, one area—music—has been blatantly ignored.



It seems that despite the pervasion of music and sound in everyday life, few in computer science have awakened to the realization that music in multimedia is an effective and necessary aspect of communication in this modern age. The very name "multimedia" implies exactly that: many mediums, including graphics, animation, narration, video, and yes, music.

The reason for this lack of awareness is two-fold. First of all, most computer scientists lack expertise in the areas of music theory and MIDI technology. As a result, many music applications look more like graduate dissertations than user-friendly software. Many add insult to injury by refusing to acknowledge the centuries of music history, theory and method. Music is a potent form of communication, and music software must allow the user to add inflection and emotion. Imagine a word processor that didn't permit you to use punctuation!

Second, listening is in many cases a passive activity. As such, we're not always aware of music's persuasive nature; but try watching a film or television program with no sound, and you'll quickly appreciate the continuity and fluidity that music provides. Why, even silent movies played to the live performance of a piano player! Eyes can be closed, blocking out the light, but ears simply can't be turned off, so we take our hearing for granted.

The opportunity to develop an intelligent composition system is wide open. My company has seized this chance and has profited from it greatly, both financially and intellectually. In designing Bars&Pipes and, more recently, Bars&Pipes Professional, we've brought music composition out of the darkness and into the realm of multimedia in a number of ways. We've included ARexx support so that Bars&Pipes can be coordinated with other Amiga applications. We've designed the Bars&Pipes MIDI Player, a stand-alone program (used in Atlanta's presentation seeking the 1996 Olympics). We've also published Cue Card, a hit list Tool; accommodated 80 MIDI channels to enable live recording and synchronization; and supported Geodesic Publications' IllumiLink, which enables Bars&Pipes to coordinate external hardware.

As the cost of MIDI technology decreases, and our culture's interest in computer-aided presentation grows, more people will rely on computers to provide musical capabilities that were formerly the exclusive possession of an experienced group of composers and performers. As a musician, this scares me. As president of a music technology company, this excites me no end.

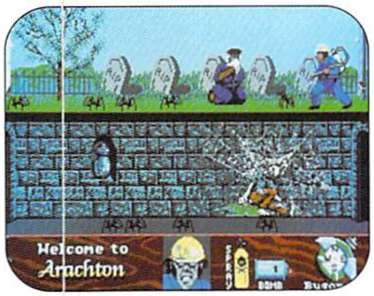
—Melissa Jordan Grey
The Blue Ribbon SoundWorks

LAST LICKS

ILLUSTRATED BY RUTH SOFAIR KETLER

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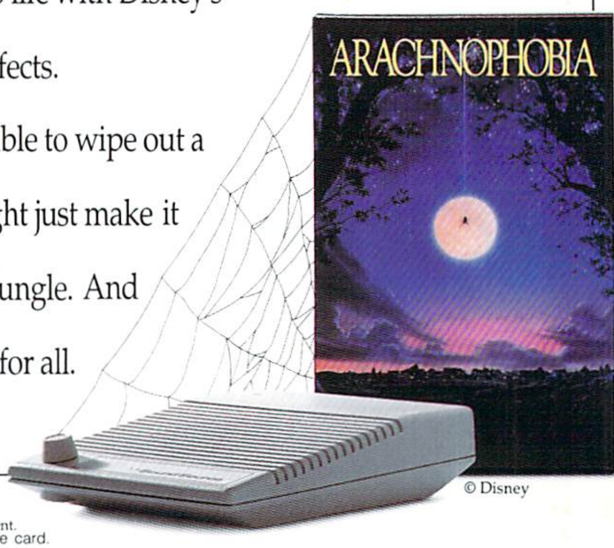


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